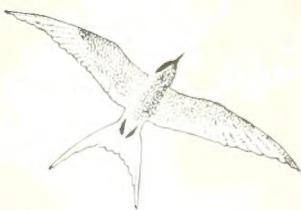


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THE GOLDFINCH OF EUROPE



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THE BULLFINCH OF EUROPE

THE LIVING WORLD



New England 5119 Summer St. Boston

Vol. I.

SAM'L WALKER & CO.,
BOSTON.

THE
LIVING WORLD:
CONTAINING DESCRIPTIONS OF
THE SEVERAL RACES OF MEN,
AND ALL SPECIES OF
ANIMALS, BIRDS, FISHES, INSECTS,
ETC., ETC.
With Numerous Anecdotes,
ILLUSTRATIVE OF THEIR
INSTINCTS, REASONING POWERS, AND DOMESTIC HABITS.

BY
AUGUSTUS C. L. ARNOLD, LL.D.,
AUTHOR OF "A PHILOSOPHICAL DICTIONARY," ETC.
ASSISTED BY
EDWARD A. SAMUELS, Esq.,
AUTHOR OF "ORNITHOLOGY OF NEW ENGLAND," ETC.

VOL. I.

Nature is a book written on both sides, within and without, in which the finger of God
is plainly visible.—FRED. VON SCHLEGEL.

BOSTON:
SAMUEL WALKER & CO.
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INTRODUCTION.

It is not the object of this work to explore the entire field of Natural History, which properly includes, 1. *Anthropology* — the history of Man; 2. *Zoology* — the description of Animals; 3. *Botany* — the science of Plants; and, 4. *Geology* — the history of the Earth, embracing, also, a description of minerals, or *mineralogy*. Only the living, animated world will be represented on these pages.

Aware that most scientific works are dry and uninteresting to the mass of the people, being intended chiefly for scholars, and the more educated classes, we have endeavored to treat the subject in a manner that will both entertain and instruct at the same time. While maintaining scientific exactness in the classification and description of objects, we have carefully avoided wearisome details, and introduced such a variety of pleasing and instructive matter as will, it is believed, arrest the attention of all grades of readers, and create in them a desire to know more of the nature and character of those races of animals over which the Creator has given man the right and power to rule.

In the preparation of this work we have desired to produce a book for the people, and, by its suggestive style, to lead the reader to see the relationship that exists between the wonderful creations of Nature and the awful Beauties of that Unseen Realm, of which all that is glorious and beautiful in the material world is but a feeble reflection.

“Nature,” says Schlegel, “is a species of *holy writ* in a bodily form,— a glorious panegyric, as it were, on God’s omnipotence, expressed in the most vivid symbols. The outer part of this sacred volume attests the supreme power, wisdom, and goodness of the Creator, in characters too clear and luminous to be unperceived or misread by the dullest or the most vitiated eye. The inner pages comprise a still more glorious revelation, but their language is more mysterious.”

As the reader travels with us through the various kingdoms of the living world, he will find new cause to admire that infinite wisdom which has so wonderfully arranged the whole system of animated nature, and to adore that unfailing benevolence which has so liberally provided for the comfort and enjoyment of all races.

He will also perceive that naturalists, as a general thing, have not done full justice to the intelligence and reasoning powers of the lower orders. Nothing is more common than to hear the faculty of reason spoken of as the crowning prerogative of man, the divine attribute that distinguishes him from the brute, while whatever of intelligence the brute may manifest is called instinct; as if it were feared that if we allowed the common possession of the faculty of reason to both man and brute, either the brute would claim equal rank with man, and share his

immortality, or man would be degraded to a level with, and share the destiny of, "the beasts that perish." Man, it is said, is continually advancing, developing new powers, improving his moral and physical condition, adding to his comforts, pleasures, and luxuries, and subjecting more and more the forces of nature to his control, while the brute, from age to age, remains in the same state, without improvement or progress. This proposition is true; but the inference drawn from it, *viz.*, that this difference arises from the fact that man is endowed with reason, while the brute acts as he is impelled by a blind instinct, is not true. The almost numberless facts recorded on the following pages demonstrate clearly that brutes—even the most insignificant insects—do reason, in the same way, and for the same purpose, in a limited sphere, as man.

The distinguishing attribute and glory of man is not the faculty that we call reason, but the **CAPACITY TO PERCEIVE, AND ASPIRE TO, THE IDEAL**. It is this which perpetually stimulates his reason to new exertions, and impels it forward to new triumphs. Breathing the inspiring perfumes, and favored with glimpses of the glories of the Ideal World, his soul burns with unappeasable longings, and thirsts to embrace the Infinite. It is in this sublime gift, and not in the possession of the reasoning faculty, that we discover the filial relationship of man to the Divinity, his right to an immortal destiny, and capabilities for endless progress. To the brute the Ideal World is closed; consequently his reason, aroused to activity merely by his physical wants, slumbers as soon as those needs are supplied. Hence he makes little or no progress, and his history to-day is the same as his history three thousand years ago.

Reason, or the power of reflecting, is not a creative faculty, but simply an instrument, an agent. Among the lower orders it acts only as it is forced into exercise by the impulsion of material wants. When it has satisfied these, it seeks nothing further or higher. With man, on the contrary, inspired by the Ideal, it produces an everlasting unrest, and, after providing for all temporal wants, embellishes his life with the glories and enchantments of art, poetry, and philosophy, and illuminates his soul with inspiring hopes and the splendors of an immortal life.

Instinct is a faculty entirely distinct from reason, and, like reason, is possessed by both man and brute. When we see the newly born of any race seeking, by nature, sustenance at the maternal breast, we see a manifestation of instinct. The acts produced by this impulse are entirely irrational and involuntary. But when we see an insect, which, after seizing its prey, pauses to consider how he may the most easily convey it to a safe retreat, where he may enjoy it without molestation, and after repeated trials comes to a successful decision, we see an incontestable manifestation of a rational meditation.

The living world is separated by naturalists into four grand divisions, *viz.*, 1. Vertebrated animals; 2. Mollusca; 3. Articulated; 4. Radiated. These are divided again into classes, orders, genera, etc., which are arranged and considered in this work according to the system of Cuvier, modified slightly, following the suggestions of Professor Owen, and more especially of Professor Louis Agassiz, of Harvard University.

FIRST DIVISION OF THE LIVING WORLD.

VERTEBRAL ANIMALS.

A REMARKABLE analogy is perceptible in the organization and structure of all the classes and orders of this division. The spinal or vertebral column, which consists of a series of bones, articulated or bound together, extends through the whole body, at the back, furnishing a support for all its parts. The upper extremity is crowned with the head, and the lower terminates in the pelvis, or a tail. This bony column contains the spinal marrow, where the organs of sensation—the nerves—have their origin, and from which they diverge. The principal organs of life are contained in the chest and abdomen. Animals of this division consist of two sexes, male and female. A liver, spleen, pancreas, jaws incumbent, transversal, and furnished with teeth,—rudiments of teeth are seen in the beaks of birds,—and limbs, not exceeding four, form the principal features which mark the character of vertebrate animals.

FIRST CLASS OF VERTEBRAL ANIMALS.

MAMMALIA.

Animals of this class bring forth their young alive; nourish them by teats; have a heart with two ventricles; lungs; a convoluted brain; five senses; a muscular diaphragm, between the chest and abdomen; warm blood and seven cervical vertebrae. They are divided into orders, based on the varied structure of their hands or feet, and teeth, as these organs indicate more fully than any others their habits and mode of life.

"This class," says Baron Cuvier, "deserves to be placed at the head of the animal kingdom, because we ourselves belong to it, and also because it is that which is endowed with the most various powers, most numerous faculties, and delicate sensations,—all which combine to produce a higher

degree of intelligence; because, in short, it is the one most fertile in resources, most susceptible of perfection, and least the slave of instinct."

This class is divided into ten orders, the first of which is named BIMANA, i. e., two-handed — of which *man* is the sole representative. This order, for reasons that will appear in the sequel, will be considered hereafter.

ORDER II. QUADRUMANA (Four-handed).

This Order is divided into two genera — the Monkey and the Lemur. They use their hind feet with the same facility, and in the same manner, as their hands; hence the designation of the order. They all have intestines very similar to those of man; eyes directed forward; the mammae on the breast; the brain, with three lobes on each side, the posterior of which covers the cerebellum and the temporal fossæ separated from the orbit by a bony partition. In everything else, however, they gradually recede from him, in presenting a muzzle more and more elongated; a tail and a gait more like that of quadrupeds; nevertheless, the freedom of their arms and the complication of their hands admit of their performing many of the actions of man, as well as to imitate his gestures.* (Vide Cuvier, "Le Règne Animal.")

The monkey tribes — the *simiæ* of Linnaeus — are classified by Cuvier as follows: —

SIMIÆ — *Monkeys.*

I. Subgenus.	Apes proper, or of the ancient continent.
1. Subdivision.	Ourangs. <i>Simiæ</i> (Lin.). <i>Pithecius</i> (Geoff.).
2. "	Gibbons. <i>Hylobates</i> .
3. "	Monkeys. <i>Cercopithecus</i> .
4. "	Semnopithecus.
5. "	Macaques.
6. "	Magots.
7. "	Cynocephalus.
8. "	Mandrills.
II. Subgenus.	Monkeys of America.
I. Division.	Sapajoos.
1. Subdivision.	Myctees. Howling Apes.
2. "	Ateles.
3. "	Brachyteles.

* Cuvier seems to regard the small genus *hapale* — the Ouistitis — as a distinct family, separate from the monkeys, and places it between the monkeys and lemurs.

4.	Subdivision.	Lagothrix.	Gastrimargus.
5.	"	Cebus.	
II. Division.		Sakis.	
1.	Subdivision.	Brachiurus.	
2.	"	Callithrix.	
3.	"	Noethorus.	

Although the monkeys * resemble man, in their organization and appearance, more nearly than any other animals, they are farther removed from him in all the higher qualities of docility, affection, amiability, and intelligence than many orders that bear no physical resemblance to man at all. The dog, the horse, and elephant far surpass them in intelligence, as they certainly do in the capacity for improvement and general good conduct.

The peculiar conformation of these animals which enables them so readily to imitate man in many things, gives them an *appearance* of intellectual superiority which cannot fairly be attributed to them. Yet the numerous anecdotes recorded of them — too well authenticated to be doubted — compel us to believe that they often act under the influence of a higher power than that of instinct. They frequently perform actions which must be the result of reflection, and which sometimes, indeed, seem to be the practical sequence of a series of reasonings. An anecdote is related by Mr. Cops of a young red ourang, which he exhibited in Edinburgh a few years since, that strikingly illustrates the reasoning powers of the monkey tribes.

"Mr. Cops one day gave the ourang the half of an orange, a fruit of which he was passionately fond, and laid the other half aside upon the upper shelf of a press out of his reach and sight. Some time after, Mr. Cops, reclining upon a sofa with his eyes closed, the ourang began to prowl about the room, and showed that, notwithstanding his apparent inattention, the position of his favorite orange had been narrowly watched. Anxious to see the result, he continued quiet, and feigned sleep. Jocko cautiously approached the sofa to ascertain, as far as he could, that his guardian was truly asleep, and, mounting quietly and expeditiously, finished the remaining half of the orange, carefully concealed the peel in the grate among some paper and shavings, and, having again examined Mr. Cops, and seeing nothing doubtful in the reality of his sleep, retired confidently to his own couch."

Here is unquestionably the manifestation of a rational consideration — a series of mental processes leading to a distinct act. But other orders of animals exhibit powers of reasoning quite as extraordinary. Their imitative faculties seem to be unlimited. Everything they see man do they

* The word *monkey* is a corruption of *manikin*, i. e., little man.

will attempt to do; and these faculties appear to be capable of a considerable degree of cultivation. In India this propensity to copy man is applied by the natives to a practical purpose. Desiring to gather fruits and nuts, they go to the woods where the monkeys dwell, and, after collecting some, which they place in heaps, retire. The monkeys, who, in the trees, have observed the operation, immediately descend, and gather large quantities, which they arrange in piles exactly as they had seen the Indians do, when the latter return and appropriate the proceeds of the monkeys' labor to their own use. It would appear, too, that sometimes they employ this talent to their own injury. It is related of one, that after observing attentively the manner of firing off a cannon, he seized the linstock and applied it to the touch-hole, and, at the same time, as if impelled by a desire to learn how the gun could make such a thundering sound, he darted to look into the muzzle just in time to have his head blown off! Other anecdotes of similar import are recorded, but whether authentic or not we have no means of determining.

The geographical distribution of these animals and their peculiar habits will be designated in the descriptive part of this work.

APES.

We give the name *ape* to those genera of the *quadrumana* family which have neither tails nor cheek-pouches, which nearly approach man in size, and present a facial angle varying from sixty-five to thirty degrees. They are classed under three genera, *chimpanzee*, *ourang*, and *gibbon*. The *pongo*, once considered as a distinct genus, has been proved to be an *ourang* in a state of maturity.

Apes seem formed to live among the branches of trees, and find their natural home in the depths of extensive forests. They all can walk erect, although not with much ease, as the form of the foot is such that the bottom or palm cannot be placed fairly upon the ground; hence, as they stand upon the outer edges, they require a staff to support them. They live in families, construct a kind of hut, and use sticks as weapons.

GENUS TROGLODYTES—*Chimpanzee*. This genus is rightly placed first in our systems; for the Chimpanzee unquestionably stands nearest to man. It is a native of Africa, has black or brown hair, scanty in front, and is said to sometimes equal man in size and strength. It lives in troops, constructs huts of branches, attacks or repulses its enemies with clubs and stones, and some affirm that it will pursue and capture negro women. In captivity it is docile, easily learns to walk and to feed himself like a man. The facial angle of the adult is about fifty-five degrees. Of a lively and active disposition, it acquires easily some simple arts, by which it makes

itself useful to its captors. Monsieur De Grandpré speaks thus of this animal: "His sagacity is extraordinary; he generally walks upon two legs, supporting himself with a cane. The negro fears him, and not without reason, as he sometimes treats him very roughly."

THE CHIMPANZEE AS A SAILOR.—The same writer says he saw a female chimpanzee on board a vessel which exhibited wonderful proofs of intelligence. She had learned, among other arts, to heat the oven; she took great care not to let the coals fall out, which might have done mischief to the ship; and she was very accurate in observing when the oven was heated to the proper degree, of which she immediately apprised the baker, who, relying with perfect confidence upon her information, carried his dough to the oven as soon as the chimpanzee came to fetch him. This animal performed all the business of a sailor; spliced ropes, handled the sails, and assisted at unfurling them; and she was, in fact, considered by the sailors as one of themselves.

"The vessel was bound for America; but the poor animal was not destined to see that country, having fallen a victim to the brutality of the first mate, who inflicted very cruel chastisement upon her, which she had not deserved. She endured it with the greatest patience, only holding out her hands in a suppliant attitude, to break the force of the blows she received. But from that moment she refused to take any food, and died on the fifth day from grief and hunger. She was lamented by all persons on board, not insensible to the feelings of humanity, who knew the circumstances of her fate."

Other interesting details concerning this remarkable animal will be found among the miscellaneous anecdotes of the Simiadae.

GENUS PITHECUS (*Simia satyrus*, Linn.). The ourang takes rank next to the Chimpanzee, with which it has often been confounded. Its hair is of a reddish hue, and very coarse, its face bluish, and its hinder thumbs, in comparison with the toes, are very short. It is found only in the most eastern parts of Southern Asia, such as Malacea, Cochin-China, and the Island of Borneo. The ourangs of Borneo attain to the largest size, growing to be five or six feet high, and are described as terrible animals, endowed with extraordinary strength, one of them being more than a match for several unarmed men. They are frugivorous in their natural state, but the form and disposition of their teeth indicate that, like man, they can adapt themselves to any kind of food, either flesh or vegetables.

Four species of ourangs are known, viz., the red ourang—*Simia satyrus*, or *Pithecus satyrus*, of Desmarest; the *Pithecus Wormbii*; *Pithecus Abelii*, and *Pithecus morio*. They exhibit some differences in the formation of the cranium and the profile of the face, but otherwise generally

show the same characteristics. They manifest a certain degree of the reasoning faculties,* but fall far below the chimpanzee in point of intelligence. When young they are mild and docile, but as they advance in age they become degraded to the last degree. Ferocious, glutinous, and filthy, they seem a parody on man, and show what he would be were not his reason kindled and invigorated by the divine flame which is constantly streaming around him from the ideal world. Some of the species are remarkable for great activity, others are sluggish and indolent. The females manifest an ardent attachment to their offspring, and will endanger their lives to save them. All show various degrees of that restless mobility which indicates how much they are under the exclusive influence of sensation, without being able to form conclusions from their repeated experience. They are capable of imitating man in many things, and yet fail where imitation would be useful. They enjoy themselves greatly in warming themselves at fires which hunters have left in the woods; but although they have seen the men, a hundred times, replenish the fire by throwing on fresh fuel, they seem to have no power to imitate this important action, and consequently allow the fire to go out.

THE OURANG AS A MURDERER.—An English officer in India relates the following story:—

"A wealthy zemindar, or land-owner, named Hoosian Kahn, was found one morning dead in his bed, with his throat cut in a most shocking manner. It was not cut clean across, as a suicide would have done it, but it was hacked frightfully. Upon the floor, close by the bedside, was found a razor covered with blood, its stout horn handle broken, and the shank bent. The zemindar had been an excellent man, respected by the people, both high and low, and his shocking death was the cause of much excitement. And first it was thought that the murder might have been committed for the purpose of robbery; but not an article had been stolen from the house. The English watch, the jewels, the purse, and the leathern pocket-book, which were with the clothing in the room, were undisturbed. I was called to the scene of the murder as soon as it was discovered, and, with other officers, did my best to unravel the mystery. There had been some struggling on the part of Hoosian, as was evident from the condition of the bed; but he had not struggled much. We found a large bunch of hair upon the pillow, where the murderer had held the head back while the fatal work was being done; and this, together with the broken handle and bent shank of the razor, signalled to us that the assassin must have been a fellow of immense physical power.

* *Ourang*, in the Malay language, signifies a *reasoning being*, and *outang* signifies of the *woods*.

"While I was gathering up this hair, one of my companions called my attention to some marks upon the floor. A quantity of blood had run down upon a grass mat by the side of the bed, and not far from this, upon the floor, were several bloody prints, which appeared to me to have been made by a man's hand. They were certainly not the prints of a human foot. I could only account for them upon the supposition that the murderer had either slipped and fallen, or had been pushed over by the struggling zemindar, and that here was where his bloody hands had struck. The window was open, and we found stains of blood upon the stool very much in the shape of those upon the floor. This sleeping-room was the only chamber, and the murderer had made his exit by the window into the tree, the limbs of which dropped towards the house.

"The first person whom we called as witness was an old woman who had been employed for some years in the family. The zemindar's wife was just then too deeply affected to give us any coherent information. This old woman, whose name, I think, was Zaloh, recognized the razor as having belonged to her master, and she also showed us the little closet where it had been kept. The closet door had been opened, and the razor taken from the dressing-ease, and that, too, in the dark, from all which it appeared that the deed had been done by some one familiar with the premises. There had been no robbery; so we were led to the further conclusion that the murder had been an act of vengeance. And who could have entertained such feelings towards Hoosian Kahn? We had questioned Zaloh, but she shook her head. She did not reply with that promptness which might have been expected from one who had no suspicions; but she seemed rather to avoid the subject. I questioned her closely, but she was not inclined to speak.

"Do you know," said I, "if any of the servants in the house have had any feelings of ill-will against your master?"

"She begged of me to ask her mistress. The mistress had just then entered the room, and, as she heard this remark, she spoke. She said there was a servant who had such enmity against her husband; and she mentioned a table-servant named Gholam, and he was the most powerful fellow on the place. I knew him well. He was high-tempered and bold, but I had never thought him vindictive. It seems that two or three days before the zemindar had punished Gholam for some slight misdemeanor, and the latter had declared that he would have vengeance. Finally the woman Zaloh confessed that she heard the man make such a threat; and she had hesitated about telling it because Gholam was a good-hearted man, and had been very kind to her.

"Gholam was arrested and confined, and two days afterwards he was

tried and condemned. Still he was not immediately executed, as is generally the manner in capital cases in this country. His protestations of innocence were so strong and consistent, and his previous good character was so well known, that the judge sent him back to prison, there to remain a while previous to his execution.

"Hoosian Kahn had furnished considerable provisions and forage for our regiment, and after his funeral I went to his house to look over his account, which he had kept with his own hand. I was accompanied by Mr. Crans-town, one of my lieutenants. It was in the evening when we reached the house, and as all the zemindar's papers and books were in the room where he had slept, we were conducted thither, the woman Zaloh leading the way, and bearing candles. The bed was still in its old place; but the clothing had been exchanged, and the blood stains had been washed from the floor. Zaloh set the candles upon the table and then withdrew, and shortly afterwards we were joined by Hoosian's clerk, an intelligent Mohammedan named Ben Abbas. As there was quite a current of air coming in at the open window, we moved the table up into one corner, opposite the foot of the bed, to take the light from the flickering draught, after which Ben Abbas produced the books and papers. We had been engaged over the accounts half an hour, when a noise out of doors arrested our attention. It was a chattering sound, accompanied by a sort of hoarse grunt.

"'Abba!' cried the clerk, 'that is surely Kaka.'

"'And who is Kaka?'

"'He was my master's ape,' replied Ben Abbas. 'He ran away more than a week ago.'

"'Why did he run away?'

"'Because Hoosian Kahn whipped him. He came into this very room while his master was out, and ransacked the closet, and pulled the clothes from the bed. Hoosian caught him in the very act, and beat him without mercy. Kaka leaped from the window, and ran away to the woods, and has not been seen since.'

"As the clerk ceased speaking, I heard the ape mounting the tree, and I at once extinguished the lights and bade my companions draw back with me into the extreme corner behind the table; for I had a great curiosity to see what his baboonship would do. I remembered the animal very well, as I had frequently seen him about the premises. The zemindar had captured him when young, and reared him for a pet. Up the tree the fellow came, and presently he swung himself upon the stool, and thence to the room. The moon was shining brightly, and as the rays shone in through the window, leaving us in the shade, we could observe the movements of the interloper without being ourselves detected; and you will remember, furthermore, that we had the table as a screen.

"Kaka was of a large species, standing five and a half feet high when erect, and presenting a pretty good specimen of physical development. As I saw him enter the room, looking so ugly and dangerous, I instinctively clapped my hand to my pistol. Perhaps you will imagine the suspicion which had already flashed upon me. This brute, and not the knidmutger, had killed the zemindar. Crouching behind the table, and remaining perfectly still, we watched the fellow's movements. As he entered the room he stood erect upon his legs and gazed upon the bed; then he went to the closet, and opened the door, and took down the dressing-case, the contents of which he overhauled almost as systematically as a man would have done. Presently he uttered a loud cry, and dashed the case upon the floor, and then sprang towards the bed. He seized the clothing and tore it off, chattering and gnashing his teeth in a most frightful manner. Coverlets, sheets, pillows, and mattresses came off in quick succession; and when the brute found that he was only spending his rage upon inanimate substances, he caught one of the pillows and tore it into fragments, scattering the feathers over the room.

"I could bear the scene no longer. As the ape moved back, after having rent the pillow, he stood directly in the moonlight, and I think I never beheld a more savage and repulsive looking monster. I carefully raised my pistol above the table and aimed it at his head. I am not apt to miss my mark, and I did not do so in this instance. As I fired, the fellow reeled and clapped both his hands to his ears. In an instant I was upon my feet, with my sword drawn, and before the brute could recover himself, I had run him through the heart.

"By this time the family was aroused, and in a little while we were investigating the subject of the murder under the light of this new and wonderful circumstance. One look at the feet of the ape enabled me to account for the curious blood prints which I had attributed to the hand of a man. There were the very outlines and proportions which had been stamped upon the floor. And now, too, I could account for the breaking of the shank, and for the mass of hair that had been pulled from the head of the murdered man. Hoosian's widow, as soon as she saw the body of Kaka, and heard our story, cried out that the ape had killed her husband. She informed us that Kaka had been in the habit of seeing his master shave, and that several times he had been found with the razor in hand, standing before the mirror. Then she told us what Ben Abbas had already communicated — how that Hoosian had whipped the ape severely, and that the brute thereupon ran into the woods.

"On the following morning the native officers were called in, and after a very short consultation, it was decided that Gholam was innocent, and that

the ape had done the murderous deed. There could be no mistake about it. One experiment, which had not been thought of at the time of the trial, was now tried. It had been evident that the murderer had gained entrance to the zemindar's chamber from the tree; but when we came to experiment, we could not find a man able to perform that feat. There were several branches drooping towards the house, but they were not strong enough to bear a man; and we now had it demonstrated that a man of Gholam's bulk, in order to reach the window from the tree, would have to make a clean leap of at least twelve feet. In short, the evidence was plain and substantial. The ape was the criminal."

The following anecdotes exhibit the ourang in a somewhat more amiable character.

DR. ABEL'S OURANG (*Pitheccus Abelii*).—Dr. Abel brought this animal to England in 1817, and furnishes the following interesting account of him:—

" An attempt being made on board the ship to secure him by a chain tied to a strong staple, he instantly unfastened it, and ran off with the chain dragging behind; but finding himself embarrassed by its length, he coiled it once or twice, and threw it over his shoulder. This feat he often repeated; and when he found that it would not remain on his shoulder, he took it into his mouth. After several abortive attempts to secure him more effectually, he was allowed to wander freely about the ship, and soon became familiar with the sailors, and surpassed them in agility. They often chased him about the rigging, and gave him frequent opportunities of displaying his adroitness in managing an escape. On first starting, he would endeavor to outstrip his pursuers by mere speed, but when much pressed eluded them by seizing a loose rope and swinging out of their reach. At other times he would patiently wait on the shrouds, or at the mast-head, till his pursuers almost touched him, and then suddenly lower himself to the deck by any rope that was near him, or bound along the main-stay from one mast to another, swinging by his hands, and moving them one over the other. The men would often shake the ropes by which he clung with so much violence as to make me fear his falling; but I soon found that the power of his muscles could not easily be overcome. When in a playful humor, he would often swing within arms' length of his pursuer, and, having struck him with his hand, throw himself from him.

" Whilst in Java, he lodged in a large tamarind tree near my dwelling, and formed a bed by intertwining the small branches and covering them with leaves. During the day he would lie with his head projecting beyond his nest, watching whoever might pass under it, and when he saw any one with fruit, he would descend to obtain a share of it. He always retired for

the night at sunset, or sooner if he had been well fed, and rose with the sun, and visited those from whom he habitually received food.

"Of some small monkeys, on board from Java, he took little notice whilst under the observation of the persons of the ship. Once, indeed, he openly attempted to throw a small cage, containing three of them, into the sea, because, probably, he had seen them receive food of which he could obtain no part. But although he held so little intercourse with them when under our inspection, I had reason to suspect that he was less indifferent to their society when free from our observation; and was one day summoned to the top-gallant-yard of the mizzen-mast to overlook him playing with a young male monkey. Lying on his back, partially covered with a sail, he for some time contemplated with gravity the gambols of the monkey which bounded over him, but at length caught him by the tail, and tried to envelop him in his covering. The monkey seemed to dislike his confinement, and broke from him, but again renewed his gambols, and, although frequently caught, always escaped. The intercourse, however, did not seem to be that of equals, for the ourang-outang never condescended to romp with the monkey as he did with the boys of the ship. Yet the monkeys had evidently a great predilection for his company, for whenever they broke loose they took their way to his resting-place, and were often seen lurking about it, or creeping clandestinely towards him. There appeared to be no gradation in their intimacy, as they appeared as confidently familiar with him when first observed, as at the close of their acquaintance.

"This animal neither practises the grimaces and antics of other monkeys nor possesses their perpetual proneness to mischief. Gravity, approaching to melancholy and mildness, were sometimes strongly expressed in his countenance, and seemed to be the characteristics of his disposition. When he first came among strangers, he would sit for hours with his hand upon his head, looking pensively at all around him, and when much incommoded by their examination, would hide himself beneath any covering that was at hand. His mildness was evinced by his forbearance under injuries, which were grievous before he was excited to revenge; but he always avoided those who often teased him. He soon became strongly attached to those who kindly used him. By their side he was fond of sitting, and, getting as close as possible to their persons, would take their hands between his lips, and fly to them for protection. From the boatswain of the *Alceste*, who shared his meals with him and was his chief favorite, although he frequently purloined the grog and biscuit of his benefactor, he learned to eat with a spoon, and might be often seen sitting at his cabin door, enjoying his coffee, quite unembarrassed by those who observed him,

and with a grotesque and sober air that seemed a burlesque on human nature.

"On board ship he commonly slept at the mast-head, after wrapping himself in a sail. In making his bed, he used the greatest pains to remove everything out of his way that might render the surface on which he intended to lie uneven; and, having satisfied himself with this part of the arrangement, spread out the sail, and, lying down upon it on his side, drew it over his body. Sometimes I preoccupied his bed, and teased him by refusing to give it up. On these occasions he would endeavor to pull the sail from under me, or to force me from it, and would not rest till I had resigned it. If it were large enough for both, he would quietly lie by my side.

"His food in Java was chiefly fruit, especially mangostans, of which he was extremely fond. He also sucked eggs with voracity, and often employed himself in seeking them. On board ship his diet was of no particular kind. He ate readily of all kinds of meats, and especially raw meat; was very fond of bread, but always preferred fruits when he could get them.

"His beverage in Java was water; on board ship it was as diversified as his food. He preferred coffee and tea, but would readily take wine, and exemplified his attachment to spirits by stealing the captain's brandy bottle. Since his arrival in London he has preferred beer and milk to anything else, but drinks wine and other liquors.

"I have seen him exhibit violent alarm on three occasions only, when he appeared to seek for safety in gaining as high an elevation as possible. On seeing eight large turtles brought on board whilst the *Cæsar* was off the Island of Ascension, he climbed with all possible speed to a higher part of the ship than he had ever before reached; and, looking down upon them, projected his long lips into the form of a hog's snout, uttering at the same time a sound which might be described as between the croaking of a frog and the grunting of a pig. After some time he ventured to descend, but with great caution, peeping continually at the turtles, but could not be induced to approach within many yards of them. He ran to the same height, and uttered the same sounds, when he saw some men bathing and splashing in the sea; and since his arrival in England has shown nearly the same degree of fear at the sight of a live tortoise. He was taught to walk upright, and to kiss his keeper when caressed by him."

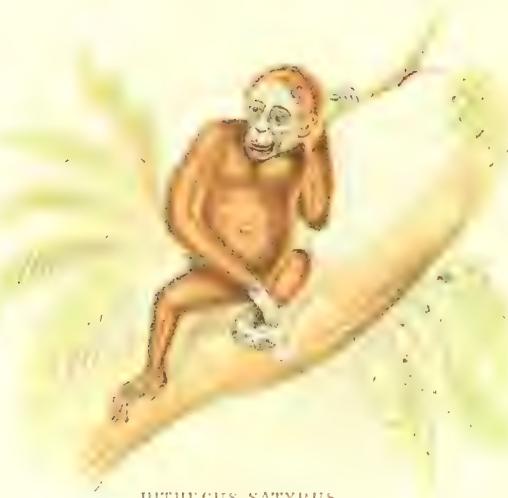
GENUS *HYLOBATES*. — The Gibbons form an interesting group of animals. Arms of remarkable length, a receding forehead, callosities on the buttocks, and absence of tail and cheek-pouches mark the character of this genus, of which there are several species, the principal of which are, —

MAMMALIA.

Plate



TROGLODYTES NIGER
(The Black Orang-utan.)



PITHECUS SATYRUS
(The Red or Asiatic Orang-utan.)



HYLOBATES AGILIS
(The Gibbon.)



NASALIS LARVATUS
(The Proboscis Monkey.)



NASALIS LARVATUS
(The Proboscis Monkey.)



HYLOBATES AGILIS.
(The Active Gibbon.)

BOSTON, SAMUEL WALKER & CO.

The Onko Gibbon (*Hylobates Rafflesii*). Color, black; the face surrounded with white hairs.

The Lar Gibbon (*H. Lar.*). Black; feet and hands white; a circle of white surrounding the face.

The Hooloch Gibbon (*H. Hooloch*). Black; the forehead crossed with a white mark.

The Coromandel Gibbon (*H. Choromandus*). Dirty pale brown; hair and whiskers black.

The Wou-wou, or Nimble Gibbon (*Simia agilis*). Brown, with a yellowish circle round the face and lower part of the back. It is the most active of all the gibbons. It utters a cry resembling *wou-wou*; hence its name. A specimen of this species, seen in the Zoölogical Gardens, London, is thus described by a writer in the Penny Magazine:—

"This specimen was a female, and had been four years in captivity at Macao previous to her arrival in this country (England). On entering the apartment in which she was to be kept, where a large space and a tree full of branches were allotted for her accommodation, she sprang upon the tree, and, using her hands in alternate succession, she launched herself from bough to bough with admirable grace and address, sometimes to the distance of twelve or eighteen feet. Her flight might be termed aerial, for she seemed scarcely to touch the branches in her progress. It was curious to witness how abruptly she would stop in her most rapid flight. Suddenly as though she would raise her body, and sit quietly gazing at the astonished spectators of her gymnastics.

"She possessed great quickness of eye; and apples and other fruit were often thrown at her with great rapidity, but she always caught them without an effort. On one occasion a bird was set at liberty in her apartment. She marked its flight, made a spring to a distant branch, caught the bird with one hand on her passage and attained the branch with the other. She instantly bit off the head of the bird, picked off the feathers, and threw it down without attempting to eat it.

"While exerting herself in feats of agility, the gibbon ever and anon uttered her call-notes, consisting of the syllables *oo-ah! oo-ah!* in a succession of ascending and descending semitones, during the execution of which the lips and frame vibrated. The tones were not unmusical, but deafening from their loudness.

"In disposition this creature was timid, being apparently afraid of men, but allowing women to come near her, and stroke her fur, and pat her hands and feet. Her eye was quick, and she seemed to be perpetually on the watch, scrutinizing every person who entered the room. After exer-

cising in the morning from three to four hours she would, if allowed, spend the rest of the day quietly on one of the branches."

In addition to the above species we have,—

The Gray Gibbon (*Simia leucisca*). Color, gray; crown, dark; whiskers, and beard, white; face, black.

The Siamang (*S. syndactyla*). This species has the second and third toes of the hind foot united by a narrow membrane, the whole length of the first phalanx. It is entirely black, the eyebrows and chin somewhat reddish. It is gregarious, seeming to be organized into companies, which are commanded by captains or leaders.

All the gibbons are remarkable for the great length of their arms, which are so long that, when the animal stands erect the hands nearly touch the earth. This singular conformation seems to adapt these creatures to their situations in a manner that would scarcely be imagined without having been witnessed. They make their home in the tops and high-reaching branches of the trees of the Oriental forests, which Nature appears to have fitted for their accommodation. They delight to make long leaps from tree to tree, and to swing themselves on the branches. All species of the Simiadae show considerable excitement at dawn, and also when night begins to wrap the earth in darkness; but the gibbons are peculiarly affected by this phenomenon, and pay a kind of instinctive worship to the sun, hailing him with loud cries as he rises, and saluting him in the same manner when he sets. Should their singular matin or vesper service be interrupted by any cause, they instantly vanish in the thickest part of the forest.

MONKEYS OF THE EASTERN CONTINENT.

GENUS *CERCOPITHECUS*—True Monkeys. Muzzles somewhat prominent, tails, cheek-pouches, callosities on the buttocks, the last of the inferior molars with four tubercles, mark their generic character. The hair is of two kinds, the outer marked with two colors above, blending in such a manner as to produce in some a tinge of green. The species are very numerous, greatly varying in size and color; but all are alike in their propensity to mischief, seeming to delight in pillaging gardens, ravaging cultivated fields, and appropriating to their own use whatever of an eatable nature they can lay their hands on.

Over twenty species are now known, exhibiting considerable differences in the length of the fingers. A few of the larger appear to have some of the generic marks of the Baboon. The following are some of the most interesting of them, all of which are peculiar to Africa:—

The Diana Monkey (*Cercopithecus Diana*). Beautifully variegated;

has a pointed white beard, and a white mark, in the shape of a crescent, on the forehead. The top of the head is greenish.

The Varied Monkey (*C. mona*) is also variegated.

The Potas (*C. rubra*) is entirely red.

Red-eared Monkey (*C. erythrotis*). Color, gray; tail, red, a dark line running along the upper surface.

Campbell's Monkey (*C. Campbellii*). Hair long, and parted on the back; grayish; beneath, dirty white. The fore part and sides of the crown of the head are encircled by a black line.

The Bearded Monkey (*C. pogonias*). Very long, grayish hair; a spot on each side of the head and on the crown, and a large tuft of hair on each cheek, distinguish this species.

There are several smaller species, of gentle temper, and capable of considerable attachment. They are the Talapoin Monkey (*C. talapoin*), the Mustache Monkey (*C. cephus*), the Hocheur Monkey (*C. nietitans*), and the Vaulting Monkey (*C. petauristus*). The *C. Martini*, discovered a few years since, belongs to this group. Its color is dark gray; the crown of the head, tail, and lower parts of the limbs blackish. There are the Green Monkeys, of larger size, nearly related to these, and the Mangabees, *C. aethiops* and *C. fuliginosus*, of a dusky color, with white eyelids, also distinguished by more elongated muzzles, and some peculiarities of movement.

GENUS COLOBUS.—The name of this group is derived from the Greek word *kolobos*, maimed, or imperfect. Nine species are known. They have only one sort of hair, and are without the thumb.

The Black Colobin (*Colobus satanas*) cannot be domesticated. It will not endure captivity, and when captured refuses all food, and seems to demand its liberty with mournful cries.

The Full-bottomed Monkey (*C. polycomos*) has a long mane, yellow-white.

The *C. quereza*, found in Abyssinia, is white, and the *C. ferruginosus*, of Sierra Leone, is of a deep bay color. The rest of the species are of a black ground color.

The Colobi and Cercopitheezi are African monkeys. Great numbers of them are slaughtered annually for the sake of their hides, which, in Western Africa, are important articles of commerce.

GENUS SEMNOPITHECUS—The Doucs. Cuvier places this division next to the Gibbons, which it much resembles in many important particulars.

Semnopithecus has a projecting muzzle, callosities on the buttocks, and only one kind of hair, like the Gibbons; it is also without cheek-pouches. There are several species of this group; twelve or fifteen

are known. They are grave and stately in their movements, as their name indicates, and are sometimes called Solemn Monkeys. One species (*Semnopithecus nemaeus*) is remarkable for the brightness and variety of its colors. Each side of the head is adorned with a tuft of yellow hair; it has a collar of red and black; the face is orange; legs bright red; the hands, thighs, and feet black; the body and arms gray. Another species (*S. entellus*), of a light yellowish gray color, is in many parts of India an object of religious reverence. All the Semnopitheezi belong to Asia and the islands of the Indian Ocean. Some of the last mentioned species are kept in the temples, guarded with the greatest care, and treated with the utmost deference. In Amadabad, the capital of Guzerat, there are three hospitals for monkeys, where the sick and lame have medical attendance. When the Portuguese plundered the island of Ceylon, they found, in one of the temples dedicated to these animals, a small golden casket, containing the tooth of a monkey. This was held in such estimation by the natives, that they offered seven hundred thousand ducats to redeem it. The viceroy, however, ordered it to be burned. But some years afterwards, a Portuguese, having obtained a similar tooth, pretended that he had recovered the old one, which so rejoiced the priests that they purchased it from him for a sum exceeding fifty thousand dollars.

GENUS MACACUS—The Macaques. The individuals of this group do not have the light and active form nor sprightliness of the preceding. These animals, like the preceding species, have a fifth tubercle on their last molars, and callosities and cheek-pouches like the monkeys proper. Their limbs are shorter and stouter than those of the Doues. They inhabit India.

There are seven species. The Wanderoo (*Macacus silenus*), black, with an ash-colored mane, and tufted tail, is found in Ceylon. The Bonneted Macaque (*M. sinicus*), the Toque (*M. radiatus*), and the Hair-lipped Macaque (*M. cynomologus*), have long tails. The *M. rhesus* has a tail like a pig. The Brown Macaque (*M. nemestrinus*) has one still shorter, while the Black Macaque (*M. niger*) has none at all, or a small tubercle in its place. This last has a perpendicular tuft of hair upon its head.

GENUS INUUS—The Magots. This is the only representative of the Quadruped family found on the European continent. These monkeys resemble the Macaques in having a tubercle in place of a tail. There is but one species known,—the Barbary Magot (*Inuus sylvanus*),—a native of Barbary, but found at Gibraltar. It is a hardy, intelligent animal, of a greenish brown color, and, although in captivity it is often savage, can be reduced to a tolerable degree of subjection, and be made to perform a variety of amusing tricks.

GENUS *Cynocephalus*—The Baboons. The Cynocephali exceed in size all quadrumanous animals with the exception of the ourang-outang. Their generic name—*Cynocephalus*, i. e., dog-headed—well indicates the most striking peculiarity of this class of animals. They have tails of various length; some have them longer than the body. They are large, powerful, and extremely ferocious brutes, and, with one exception,—the Tartarin Baboon, which is found in Arabia,—are confined to Africa. Their resemblance to man is most striking, and yet it is of such a character as to create the most disagreeable impression. The Anubis Baboon (*C. anubis*), a large Cape species, and the Sphynx Baboon (*C. sphynx*), are the most dangerous and mischievous. It is said that the inhabitants hunt them with dogs and guns to destroy them, because of their depredations in fields and gardens. They are more than a match for dogs, and can only be overcome by fire-arms.

There are seven species of this group, besides the Mandrills, which constitute a subgenus, of which there are two species. The Mandrill Baboon (*Simia maimon*) is a most extraordinary looking animal. Its tail is very short. In color it is variegated in a remarkable manner. The body is grayish-brown, tinged with olive above; the cheeks are blue; beard citron-yellow; nose red, with a scarlet tip, and buttocks violet. Its great strength and size,—which nearly approaches that of man,—make it an object of terror to the people where it abounds. A more hideously disgusting animal can scarcely be conceived of; and yet in the admirable economy of nature it has its use and purpose, to which it is singularly adapted. On this subject the editor of the last edition of Cuvier's *Animal Kingdom* appropriately remarks, "Hideous as the animals of this genus appear, and disgustingly deformed to those who have only seen them in captivity, their adaptation to a peculiar mode of life is of course as exquisite as that of any other animal, and requires only to be understood to command an amount of admiration which must lessen, to a considerable extent, the abhorrence with which we are apt to regard them. It has lately been discovered that they chiefly inhabit barren, stony places, where they subsist for the most part upon scorpions, to procure which they employ their hands to lift up the numerous loose stones, under most of which one or more of these creatures commonly lie concealed; their stings they extract with great dexterity. Accordingly they are expressly modified for traversing the ground on all-fours, and are furnished with efficient hands; their eyes are peculiarly placed, directed downwards along the visage."

Notwithstanding the savage and apparently untamable disposition of baboons, some of them have been tolerably broken and brought into a state of subjection, when they have shown a remarkable talent for imita-

tion, and for the acquisition of certain arts, which they have practised in public to the great amusement of thousands of spectators. Even the ferocious Mandrill has performed his part on the stage, in a kind of monkey-drama, in a very agreeable manner.

DONETTI'S BABOONS AND MONKEYS.—An Italian, by the name of Donetti, after a study of many years, succeeded in training a number of baboons and monkeys so as to make them do his bidding. But if they lost sight of him only for a moment, their savage instinct instantly resumed its sway. Donetti triumphed over them solely by the power of his eyes, and he seldom or never punished them. By kindness alone he obtained the wonderful results described below. He invented a kind of pantomime, in which monkeys and baboons, assisted by dogs, were the performers. In the first scene the curtain rose slowly and disclosed a table, around which six well-dressed monkeys, of different species, were sitting down, waiting for their supper. They sat with demure faces, excepting now and then a chattering which they held together, resembling the chattering of men in a hurry to get their food. Mme. Rattafia, another monkey, dressed in a blue skirt and short gown, with cap on head, came in with a pair of candles, which she placed on the table, and retired to bring the edibles, and with a quickness of motion and propriety of conduct that would have been creditable in human servants. Mme. Rattafia's son, a tiny monkey dressed as a cook, with white frock and cap, brought in a plate of salad, which was placed before the convivial party, which was soon devoured with gusto by the hungry crew; cakes, nuts, and other dainties followed, and were speedily disposed of in the same way. Mme. Rattafia and her son brought in a basket of wine; each monkey received his bottle, and seemed to like it greatly.

Donetti next introduced *Le Magot d'Afrique*, a handsomely dressed monkey, who jumped on a slack rope, and performed evolutions beyond the skill of the performers in our circuses. After the Magot's performance the "*Superbe Mandrille*" was introduced, and went through the most surprising feats of tumbling and whirling on the rope. Then came a Chimpanzee, dressed as a general, riding on a dog, with sabre in hand, followed by his army of monkeys on foot, the first of whom, as he followed on his hind legs, leaned his head on the dog's tail, while the other three, also bending their backs, reposed in like manner upon him and each other, performing several military evolutions.

In another scene, Mlle. Minie came in, riding on a magnificent dog, and went through her exercises in a creditable manner, jumping on and off her courser with the greatest agility, and performing in imitation of circus riders, going through all her feats with a serious face, and with the

greatest apparent satisfaction. M. Donetti then introduced the tight-rope dancer, a mandrill of the largest size, who, in imitation of the rope-dancer, had his feet chalked, and then commenced his dancing and jumping on the rope, with a balance-pole in his hands. At the rise of the curtain, and at the sound of martial music, the Marchioness of Batavia entered, riding in her barouche, drawn by two white poodles. On the box a monkey-coachman sat, holding the reins and cracking his whip. Behind the carriage a monkey-footman rode in rich livery. The noble monkey-lady had occasion to descend from her carriage, and displayed her rich costume. She remounted; the carriage started at a rapid rate; one of the linchpins gave way; the barouche was upset; the monkey-lady fell out; a chair was brought, on which she sat, steadyng her nerves, until the footman, who had run about to repair the accident, succeeded in recovering the wheel and replacing it; all the time during the accident the coachman had been holding his dog-coursers, to prevent their running away. The carriage having been repaired, the monkey-marchioness reentered, and the equipage drove off.

In another scene — "The Deserter" — a dog dressed as a soldier was seen walking on his hind legs, carrying a musket on his shoulder, and leading in a monkey, also dressed in uniform, with two large red epaulets. A monkey robed as a clergyman, with white bands projecting from his throat, brought in a placarded sentence of condemnation to death by shooting. While a bell was slowly tolling, the master tied a handkerchief around the head of the culprit, who, as one of the dogs fired a gun at him, fell motionless as if dead. A mournful tune was heard, and a monkey, dressed as a grave-digger, in rusty black clothes, wheeling in a black cart, put the dead monkey into it, and took him off to perform the burial.

The above facts would seem to show that naturalists are not quite correct in their positive and persistent assertion that baboons cannot be tamed. According to Le Vaillant, the celebrated traveller, — the same who first discovered the *giraffe*, — even the dog-headed baboon (*Cynocephalus anubis*) may be domesticated. He procured one of this species when in Southern Africa, of which he has given the following interesting account: —

"I took him with me wherever I went, and made him my *taster*. Whenever we found fruits or roots, with which my Hottentots were unacquainted, we did not touch them till 'Kees' — this was the name he had given him — had tasted them. If he threw them away, we concluded that they were either of a disagreeable flavor or of a pernicious quality, and left them untasted. The baboon possesses a peculiar property, wherin he differs greatly from other animals, and resembles man, namely, that he is by nature equally gluttonous and inquisitive. Without necessity and without appetite, he tastes everything that falls in his way, or that is given to him.

"But Kees had a still more valuable quality: he was an excellent sentinel; for, whether by day or night, he immediately sprang up on the slightest appearance of danger. By his cry, and the symptoms of fear which he exhibited, we were always apprised of the approach of an enemy, even though the dogs perceived nothing of it. The latter at length learned to rely upon him with such perfect confidence that they slept on in perfect tranquillity. I often took Kees with me when I went a-hunting; and when he saw me preparing for the sport, he exhibited the most lively demonstrations of joy. On the way he would climb into the trees to look for gum, of which he was very fond. Sometimes he discovered to me honey, deposited in the clefts of rocks or hollow trees. But if he happened to have met with neither gum nor honey, and his appetite had become sharp by his running about, I always witnessed a very ludicrous scene. In those cases he looked for roots, which he ate with great greediness, especially a particular kind, which, to his cost, I also found to be very well tasted and refreshing, and therefore insisted upon sharing with him. But Kees was no fool. As soon as he had found such a root, and I was not near enough to seize on my share of it, he devoured it in the greatest haste, keeping his eyes riveted all the while on me. He accurately measured the distance I had to pass before I could get to him, and I was sure of coming too late. Sometimes, however, when he had made a mistake in his calculation, and I came upon him sooner than he expected, he endeavored to hide the root, in which case I compelled him, by a box on the ear, to give me up my share.

"When Kees happened to tire on the road, he mounted on the back of one of my dogs, who was so obliging as to carry him whole hours. One of them, that was larger and stronger than the rest, hit upon a very ingenious artifice to avoid being pressed into this piece of service. As soon as Kees leaped upon his back he stood still, and let the train pass without moving from the spot. Kees still persisted in his intention till we were almost out of sight, when he found himself at length compelled to dismount, upon which both the baboon and dog exerted all their speed to overtake us. The latter, however, gave him the start, and kept a good lookout after him, that he might not serve him in the same manner again. In fact Kees enjoyed a certain authority with all my dogs, for which he was indebted, perhaps, to the superiority of his instinct. He could not endure a competitor; if any of the dogs came too near him when he was eating, he gave them a box on the ear, which compelled them immediately to retire to a respectful distance.

"Like most other domestic animals, Kees was addicted to stealing. He understood admirably well how to loose the strings of a basket, in order to

take victuals out of it, especially milk, of which he was very fond. My people chastised him for these thefts, but that did not make him amend his conduct. I myself sometimes whipped him, but then he ran away, and did not return again to the tent until it grew dark. Once, as I was about to dine, and had put the beans, which I had boiled for myself, upon a plate, I heard the voice of a bird with which I was not acquainted. I left my dinner standing, seized my gun, and ran out of the tent. After about a quarter of an hour I returned, with the bird in my hand, but, to my astonishment, found not a single bean upon the plate. Kees had stolen them all, and taken himself out of the way.

"When he had committed any trespass of this kind, he used always, about the time when I drank tea, to return quietly, and seat himself in his usual place, with every appearance of innocence, as if nothing had happened; but this evening he did not let himself be seen. And on the following day also he was not seen by any one; and, in consequence, I began to grow seriously uneasy about him, and apprehensive that he might be lost forever. But on the third day one of my people, who had been to fetch water, informed me that he had seen Kees in the neighborhood; but that, as soon as the animal espied him, he had concealed himself again. I immediately went out, and beat the whole neighborhood with my dogs. All at once I heard a cry like that which Kees used to make when I returned from my shooting and had not taken him with me. I looked about, and at length espied him, endeavoring to hide himself behind the large branches of a tree. I now called to him in a friendly tone of voice, and made motions to him to come down to me. But he could not trust me, and I was obliged to climb up the tree to fetch him. He did not attempt to fly, and we returned together to my quarters. Here he expected to receive his punishment; but I did nothing, as it would have been of no use.

"When any eatables had been pilfered at my quarters the fault was always laid first upon Kees; and rarely was the accusation unfounded. For a time, the eggs, which a hen laid me, were constantly stolen away, and I wished to ascertain whether I had to attribute this loss also to him. For this purpose I went one morning to watch him, and waited till the hen announced by her cackling that she had laid an egg. Kees was sitting upon my vehicle, but the moment he heard the hen's voice he leaped down, and was running to fetch the egg when he saw me. He suddenly stopped, and affected a careless posture, swaying himself backwards upon his hind legs, and assuming a very innocent look; in short, he employed all his art to deceive me with respect to his design. His hypocritical manœuvres only confirmed my suspicions, and in order, in my turn, to deceive him, I pretended not to attend to him, and turned my back to the

bush where the hen was cackling; upon which he immediately sprang to the place. I ran after him, and came up to him at the moment when he had broken the egg and was swallowing it. Having caught the thief in the act, I gave him a good beating upon the spot; but this beating did not prevent his soon stealing fresh-laid eggs again.

"As I was convinced that I should never be able to break Kees of his natural vices, and that unless I chained him up every morning I should never get an egg, I endeavored to accomplish my purpose in another manner. I trained one of my dogs, as soon as the hen cackled, to run to the nest, and bring me the egg without breaking it. In a few days the dog had learned his lesson; but Kees, as soon as he heard the cackle, ran with him to the nest. A contest now took place between them who should have the egg; often the dog was foiled, although he was the stronger of the two. If he gained the victory, he ran joyfully to me with the egg, and put it into my hand. Kees, nevertheless, followed him, and did not cease to grumble and make threatening grimaces at him till he saw me take the egg,—as if he was comforted for the loss of his booty by his adversary not retaining it for himself. If Kees got hold of the egg, he endeavored to run with it to a tree, where, having devoured it, he threw down the shells upon his adversary, as if to make game of him. In that case the dog returned, looking ashamed, from which I could conjecture the unlucky adventure he had met with.

"Kees was always the first to wake in the morning, and when it was the proper time he aroused the dogs, who were accustomed to his voice, and in general obeyed, without hesitation, the slightest motions by which he communicated his orders to them, immediately taking their posts about the tent and carriage as he directed them."

MONKEYS OF AMERICA.

According to Cuvier they have thirty-six grinders,—four more than the preceding families; tails generally long and prehensile, that is, capable of twisting round objects, and picking them up like a hand; they have neither cheek-pouches nor callosities, and the nostrils are at the sides of the nose instead of beneath.

GENUS MYCETES—The Stentors. The systematic name of this division of the Monkey family is derived from a Greek word which signifies *howling*, and is an appropriate designation for these animals. There are seven species known. The head is somewhat like a pyramid in form, and the internal structure of it is such—a bony drum connecting with the larynx—as to give their voice an extraordinary power, as well as a most disagreeable character. Hence they are called

Howling Monkeys. In size they are about equal to the fox. In color they are brown or blackish; some of the females are yellowish white. They are frugivorous, and their flesh is said to be palatable. During the day they are quiet, but at night they wander in companies, and fill the air with their dismal howlings.

The Stentors, or Howlers, are the Baboons of the New World, and are the largest of the monkey-like animals of America. The traveller Water-ton, describing one of the species, — the Red Howler, — says, "Nothing can sound more dreadful than its nocturnal howlings. While lying in your hammock in those gloomy and immeasurable wilds, you hear him howling at intervals from eleven o'clock at night till daybreak. You would suppose that half the wild beasts of the forest were collecting for the work of carnage. Now it is the tremendous roar of the jaguar as he springs on his prey; now it changes to his terrible deep-toned growlings, as he is pressed on all sides by superior force; and now you hear his last dying moan beneath a mortal wound."

Mycetes ursinus. — The Araguato. Messrs. Humboldt and Bonpland discovered this species, and it is thus described in the narrative of these travellers: —

"Having landed at Cumana, we saw the first troops of Araguatos in our journey to the mountains of Coallor and cavern of Guacharo; and although the convent of Carisse is situated at a high elevation, and the degree of cold during the night considerable, the surrounding forests abound with Araguatos, whose mournful howling is heard at the distance of half a league, especially when the weather is open, or an electric state of the air foretells rain or a storm."

They feed on fruits as well as the leaves of vegetables. The females are often seen carrying the young upon the shoulder, but no difference in the color between the ages or sexes was perceived. Humboldt thought, of all gregarious monkeys none appeared so numerous as this species, and had no doubt that on a square league alone two thousand might be found.

GENUS ATELES — The Coaita. The animals comprised in this genus are remarkable for their great sluggishness, slowness of motion, and extreme timidity.

Several species are found in Brazil and Guiana, the best known of which are the Chamek (*Ateles subpentadactylus*), the Miriki (*A. hypoxanthus*), and *Simia paniscus* (Linn.). They have long and slender limbs, and a sprawling gait, on which account they have been called Spider Monkeys. In color they are generally black; some have a flesh-colored face. In disposition they are mild, trustful, and capable of domestication. Like the Stentors, they have the prehensile part of the tail naked beneath.

GENUS *LAGOTHRIX* (*Gastromargues*).—The Gastroimargues have round heads, tails like the preceding, and thumbs like the Stentors. Two species are tolerably well known—the Capparo (*LAGOTHRIX HUMBOLDTII*) and the Grison (*L. canus*). They are of a social nature, move in troops, and are excessively glutinous.

GENUS *CEBUS* (*Capuchins*).—There are fifteen or sixteen species of this group, but few of them, however, are well known. They have a round head, thumbs distinct, and the prehensile tail entirely hairy. Their general color is brown, and some of the species have tufts of hair upon the forehead; one, the Horned Capuchin (*Simia fatuellus*, Linn.), has them on each side, resembling horns. They emit a musk-like odor, and are distinguished for agility and gentleness of disposition.

GENUS *SAMIRIS*.—But one species is known, the Siamiri (*Simia sciurea*, Linn.), which is a very pretty little animal, not larger than a squirrel. The general color is yellowish-gray, the end of the nose is black, and the limbs and extremities of deep yellow. The head is quite flat, and the tail is but slightly prehensile, and cannot be used as a hand to pick up objects.

The above genera, having prehensile tails, are called SAPAJOUS. The tails of the remaining genera are without this character. Some of them, called Fox-tailed Monkeys, have this member long and tufted.

GENUS *PITHECIA* (*Sakis*).—The Sakis compose three families or groups. The Yarke Saki (*Pithecia leucocephala*) belongs to the first. It presents a remarkable appearance, having very long hair, a whitish head, and body and limbs of a brown black. The Sakis dwell in thick forests; some of them feed on fruits and vegetables, and others on wild bees, honey, and insects. They move in small bands.

GENUS *CALLITHRIX* (*Sagouins*).—There are several species, of which the best known are the Masked Sagouin (*Callithrix personata*), the Widow Sagouin (*C. lugens*), and (*C. melanochir*). Some of these live in pairs, others live in large societies, and hail the rising sun with loud and discordant cries.

These curious animals, of which eight species are described, inhabit the forests of Brazil and Cayenne. They are excessively shy in captivity, and will not move even to take food, however hungry they may be, when any person is observing them. But left alone, they are exceedingly active, darting, with the swiftness of a cat, upon whatever prey may be thrown to them, and swallowing it in a moment. They never use the tail for support, but when at rest, keep it wound round the body or limbs. When sleeping, they drop the head between the fore legs. They are beautiful little creatures, rarely exceeding ten inches in length, exclusive of the tail, which

is between thirteen and fourteen. The different species vary in color from a greenish yellow to a shining black. The hair is remarkably soft and lustrous. Some have the throat marked with a white band; the hands also, on the outside, of the same color, resembling somewhat a pair of white gloves.

GENUS *NOCTHORUS* (*Douroucouli*).—Only three species are known. They sleep during the day in hollow trees, and seek their food at night, which consists indiscriminately of birds, insects, and fruits. They live in pairs. The head of the Douroucouli is more like that of a cat than a monkey. The eyes are very large, and the mouth is surrounded with strong, white, bristly hairs. When sleeping, it is seated like a dog, the back is bent, the four hands are brought together, and the head is almost concealed between them. It is a savage little animal, and has never been thoroughly tamed. When enraged, it raises its back like a cat, and strikes with its paw, using it with great quickness. It inhabits the forests of the Orinoco.

GENUS *HAPALES*—The Marmosets. This is a group of interesting and lively little animals. Eight species are ascertained, the most remarkable of which is the Fair Monkey (*Simia argentea*, Linn.). It is a beautiful animal, having the head small and round, face and hands scarlet, the body and limbs covered with long hair, of shining white; the tail longer than the body, and of a lively, shining, chestnut color. It is larger than the Striated Monkey (*S. jacchus*, Linn.). This pleasing monkey abounds on the Amazon. All the Marmosets are interesting, lively, and pretty creatures, and, with the exception of the Tamarins, are the smallest animals of the Monkey-family.

Hapales jacchus—Striated Monkey. This is a beautiful little animal, easily tamed, becoming playful and familiar after the restraint of a few hours. It is about eight inches in length, exclusive of the tail, which is nearly a foot. The general color of the fur is a grayish olive, approaching to black on the head and shoulders, and the lower part of the back and tail are annulated with circles of a rich pale gray, which alternately shade into each other; the lower parts of the body and fore parts of the extremities are brownish-gray. The face is flesh-color, and there is a white spot on the forehead. The animal is singularly marked by two tufts of grayish-white hair, of considerable length, which spring round each ear. It is omnivorous. Edwards says the one which he had opportunities of observing "fed upon biscuits, fruits, insects, &c., and that once, when loosed, it snatched a Chinese gold-fish from a basin of water and immediately devoured it. After this its owner gave it live eels, which frightened it at first by twisting round its neck, but it soon mastered and ate them."

The young generally keep under the belly of the female, but when she becomes tired with carrying them she calls the male, with a shrill cry, when he immediately relieves her with his hand, placing the young upon his back, or under his belly, where he carries them until they become restless for milk, when they are transferred to the mother.

GENUS MIDAS.—The Tamarins. In this group we have the smallest members of the Monkey-family. They inhabit the plains which border the eastern slope of the Cordilleras. Eight species have been discovered, among which are the well-known Pinche (*Simia adipus*, Linn.), the Silky Tamarins (*Midas rosalia*), and the Lion Monkey (*M. leoninus*). They are extraordinary little creatures, of very pleasing forms, and very various in their colors; are remarkably neat and active, and tamed without difficulty.

With the Tamarins closes the series of the great family Simiæ.

GENERAL ANECDOTES OF THE SIMIADÆ.

THE MONKEY WIFE-MURDERER.—Sir John Trevelyan had a monkey of the genus Hapale, — fair monkey, — which he had rendered very tame. He named him *Pug*. Sir John relates the following in regard to him: "Pug was a gentleman of excellent humor, and adored by the crew, who, to make him perfectly happy, as they imagined, procured him a wife. For some weeks he was a devoted husband, and showed her every attention and all due respect. He then grew cool, and became jealous of any kind of civility shown her by the master of the vessel, and began to use her with much cruelty. His treatment made her wretched and dull, though she bore the spleen of her husband with that fortitude which is the characteristic of the female sex of the human species.

"Pug, however, like the lords of creation, was up to deceit, and practised pretended kindness to his spouse to effect a diabolical scheme which he seemed to premeditate. One morning, when the sea ran very high, he enticed her aloft, and drew her attention to an object at some distance from the yard-arm; her attention being fixed, he all of a sudden applied his paw to her rear, and cast her into the sea, where she fell a victim to his cruelty. This seemed to afford him high gratification, for he descended in great spirits."

THE OURANG NANCY.—This specimen was brought to the United States in 1835. She was obtained in Calcutta. The following description of her was prepared by a person who had opportunities of observing her closely during five weeks: —

"During the voyage she was for the most part confined to her cage, and

her principal food was boiled rice, of which she consumed about one pint three times a day, together with such fruits as they were able to preserve. She was exceedingly fond of cocoanuts, and was well acquainted with the method of extracting the milk through one of the eyes. When in health, she is said to have been so strong, that, if she once possessed herself of the end of a rope, not a sailor on board of the vessel could pull it from her. Her age could not be correctly ascertained, but from appearances, until the period of her death, she was presumed to have been an adult. The teeth, being large and much worn, resembled those of an old subject. Subsequent examination, however, showed that she was comparatively young, as the second set of teeth were found just protruding through the jaw, but so covered by the soft parts as not to be discernible during life. Her age, therefore, did not probably exceed five or six years.

"Some idea of her superiority in 'reasoning power,'—if we may so apply the phrase,—over the ordinary specimens of the monkey-tribe, may be gathered from a few facts which fell under the writer's immediate notice.

"During the five weeks which he had an opportunity of observing her, notwithstanding she was constantly in the habit of using and handling vessels of glass and china, she never broke, nor suffered any of them to fall. Every article was handled with extreme care, and generally returned by her to its proper place. She was also very curious in the examination of articles which were newly presented to her sight. After attentively looking at them, instead of carelessly throwing them down, as might have been expected, she invariably returned them, and generally into the hands of the individuals from whom she received them.

"Upon a single occasion a circumstance occurred which evinced a judgment almost human. She was very fond of descending to the kitchen, and appeared much interested in observing the process of the culinary operations, and, when unwatched, embraced every opportunity of stealing off to it. In the instance to which we allude, after looking about, she finally unbuttoned and opened the door of a closet, in which a basin of milk had been placed for the separation of the cream. After attentively looking at it, and on the several shelves, as if in search of something, she carefully closed the door, and presently taking a tea-cup from the table, she returned to the closet, and after helping herself to a cupful of the milk, again closed the door, and replaced the cup whence she had taken it. A vial of medicine was carried into the room and placed upon the mantel-piece. The attendants then left the room, but kept an eye upon her. On finding herself alone, she arose from the corner where she had been sitting wrapped in her blanket, took a chair and carried it to the fireplace, mounted on it, took down the vial of medicine, uncorked it, poured the physic over the

floor, recorked the vial, and replaced the chair, and then resumed her former seat.

"In height, when standing erect, and with the arms extended upward, this animal measured three feet six inches, and at the period of her death, although much emaciated, was supposed to weigh between forty-five and fifty pounds. The arms were very long, and when hanging down reached nearly to the ankles.

"She had been much exposed to the influence of cold and damp weather during her transportation, and the evening of her arrival was first observed to be unwell; on the succeeding morning her disease had assumed the character of an irregular intermittent fever, and medical advice was resorted to. After lingering for some weeks, alternately better and worse, during which time recourse was had to every expedient which art or ingenuity could devise for her comfort and recovery, much to the regret of the few who saw her, she died at the village of Harlem, near New York, on the 19th of July following. The death-bed scene, as represented by those who were present, must have been singularly affecting. The account of it given by her keeper is as follows: Early in the evening her extremities began to grow cold, and at ten o'clock P. M. pulsation at the wrists had ceased. She appeared conscious of her approaching end, and dreaded it. She shivered and groaned very much, and appeared to supplicate those around for assistance, often extending her arms to them and embracing them around the neck. She would awake from a doze in great trepidation, and cling to the neck of her keeper, where she would hang until sleep or exhaustion caused her to loosen her hold. This was frequently repeated as long as her strength remained. After violent struggles and much groaning, at three o'clock A. M. she had ceased to breathe. A careful anatomical examination of the body was made by several medical gentlemen, by whom copious notes were taken, and the several dimensions accurately noted. After the skin was removed, a cast of the head and chest was taken in plaster of Paris; over which the skin was afterwards stretched, and the whole is now mounted, according to its measurements during life, in good preservation, and is probably the most natural and accurate stuffed specimen extant. The skeleton and such portions of the body as were of particular interest were also preserved."

THE MONKEY ON THE SOUNDING-BOARD.—A clergyman in England had a monkey, which became so much attached to his master that he desired to accompany him wherever he went. Consequently, on the Sabbath it was necessary to confine him in the house, as his presence in the church would not conduce to the solemnities of the place. One Sunday, however, he stole away, entered the church, and concealed himself on the sounding-board, directly over the clergyman's head. The sermon having com-

menced, the monkey moved to the edge, where he could observe his master, and began to mimic his gestures and motions. The effect was ludicrous enough. The whole congregation shook with suppressed laughter. The clergyman, not knowing the cause, felt himself insulted, and sharply rebuked his people for their levity. The laughing continued; the good pastor, growing excited and angry, harangued his audience in a loud voice and with more emphatic gestures. The violence and rapidity of the monkey's gesticulations and grimaces increased in the same proportion, until, unable longer to control the impulse, one simultaneous shout of laughter burst from the people, and resounded through the sacred place.

At length one of the audience called the attention of the clergyman to the cause of all this disturbance, which seemed to him so extraordinary. When he saw his monkey playing the minister over his head, he could not refrain from joining in the laugh himself. The monkey-priest was soon made to descend from his pulpit, and retire to his quarters; and good care was taken to prevent his going to church again.

THE GIGANTIC OURANG.—We find in the Asiatic Researches the following account of this rare and remarkable animal, the story of whose capture and killing—we had almost said *murder*—we cannot read without pain:—

"A boat party, under the command of Messrs. Cragyman and Fish, officers of the brig Mary Anne Sophia, having landed to procure water at a place called Ramboon, near Tournaman, on the north-west coast of Sumatra, on a spot where there was much cultivated ground and but few trees, discovered on one of them a gigantic animal of the monkey tribe. On the approach of the party he came to the ground, and, when pursued, sought refuge in another tree at some distance, exhibiting, as he moved, the appearance of a tall, man-like figure, covered with shining brown hair, walking erect with a waddling gait, but sometimes accelerating his motion with his hands, and occasionally impelling himself forward with the bough of a tree. His motion on the ground was plainly not his natural mode of progression, for even when assisted by his hands or stick, it was slow and vacillating; it was necessary to see him among trees to estimate his strength and agility. On being driven to a small clump, he gained by one spring a very lofty branch, and bounded from one to another with the ease and alacrity of other monkeys. Had the country been covered with wood, his escape could not have been prevented, as his mode of travelling from one tree to another is described to be as rapid as the progress of a swift horse. Even amidst the few trees that were on the spot, his movements were so quick that it was difficult to obtain a settled aim, and it was only by cutting down

one tree after another that his pursuers, by confining him within a very limited range, were enabled to destroy him by successive shots, some of which penetrated his body and wounded his viscera. Having received five balls, his exertions relaxed, and, reclining exhausted on one of the branches of a tree, he vomited considerable quantities of blood. The ammunition of the hunters being by this time expended, they were obliged to fell the tree in order to obtain him, and did this in the full confidence that his power was so far gone that they could secure him without trouble; but they were astonished, as the tree was falling, to see him effect his retreat to another, with apparently undiminished vigor. In fact, they were obliged to cut down all the trees before they could drive him to combat his enemies on the ground, against whom he still exhibited surprising strength and agility, although he was at length overpowered by numbers, and destroyed by the thrusts of spears and the blows of stones and other missiles. When nearly in a dying state he seized a spear, made of a supple wood, which would have withstood the strength of the stoutest man, and shivered it to pieces. It is stated by those who aided in his death, that the human-like expression of his countenance, and piteous manner of placing his hands over his wounds, distressed their feelings, and almost made them question the nature of the act they were committing. When dead, both natives and Europeans contemplated his figure with amazement."

By Captain Cornfoot, who furnished the details of this animal to Dr. Abel, he was said to be a full head taller than any man on board, measuring seven feet in what might be called his ordinary standing posture, and eight feet when suspended for the purpose of being skinned. A more exact measurement, made afterwards, proved him to have been seven feet six inches and a half in height.

It seems probable that the animal had travelled from some distance, as his legs were covered with mud to his knees. The natives, although they lived within two days' journey of one of the almost impenetrable forests of Sumatra, had never seen one like it. They seemed to think that his appearance accounted for many strange noises resembling screams and shouts, which they could neither attribute to the roar of the tiger, nor to the voice of any other beast with which they were acquainted.

LEMURS.

The Lemurs constitute the last division of the order Quadruped. They may generally be characterized as having the four thumbs well developed and opposable, and the first hind finger armed with a raised and pointed claw, having all the other nails flat. Their hair has a woolly character.

LEMUR—*Restricted.* Belonging to this group are thirteen species, which have for characters, four lower incisors, slanting forwards and compressed; four in the upper jaw, which are straight; trenchant canines; six molars on each side above, and six below. They have small ears and pointed heads, whence they have been called Fox-nosed monkeys. They live on fruits, and are exceedingly active. These are the true Lemurs, and are confined to the Island of Madagascar.

The Ring-tailed Lemur (*Lemur catta*) is ash-gray, with a roseate tinge on the back; the tail is ringed black and white. The Ruffed Lemur (*L. macaaco*) is white, with large spots of black. The Lemur Mongooz is nearly black, with whitish feet; white under the ears and on the throat; has a very pointed nose, with whiskers. These animals have been described as being of the size of a large cat, but with larger limbs. They have long tails, which are elevated when they run; sleep by day on the branches of trees, rolled up like a ball, and roam in the night; are gentle in disposition, and susceptible of domestication. Their voice is a kind of grunt, but they are capable at times of uttering a most startling howl, and often the forests in which they dwell resound with their roaring.

The remaining Lemur-like animals are arranged under seven subgenera.

LICHONOTUS—The Indris. The hinder limbs are longer, and the muzzle shorter than in the preceding. The *Lemur Indri*, the only species yet ascertained, has no tail—a tubercle takes its place; is of a black color, with a gray face. It is about three feet in height, and may be trained like a dog, and made useful in the chase. This, also, is a Madagascar animal.

MICROCEBUS—The Macaueos. A round head, short and pointed muzzle, ears erect, and fore limbs small, distinguish the Macaueos. Only two species have been found, and these in Madagascar. The Murine Macaueo (*Lemur murinus*), called by Buffon the Madagascar Rat, and the Brown Macaueo (*M. pusillus*), are described as being very like a large dormouse in appearance, habits, manners, and their general mode of life.

STENOPS—The Loris. The animals of this group are inhabitants of the East Indies, where two species are found,—the Short-limbed Loris (*S. tardigradus*) and the Slender Loris (*S. gracilis*). The Slender Loris have limbs remarkably and disproportionately elongated. They are slow in their movements, and subsist on insects, birds, or quadrupeds. They are nocturnal in their habits, sleeping by day, in a very peculiar manner, clinging to the branch of a tree, the body drawn together, and head recumbent on the chest.

PERODICTICTUS—The Pottos. Small eyes, dentition nearly like the Lemurs, and equal limbs, mark this family. One species is found in Sierra

Leone,—Geoffroy's Potto (*L. potto*). It moves at night, is slow of gait, and feeds on vegetables.

OTOLICNUS—The Galagos. They have large, membranous ears, and long, tufted tails. Several species, peculiar to Africa, have been ascertained. The Great Galago (*G. crassicaudatus*) equals a rabbit in size, and the Senegal Galago (*G. Senegalensis*) is about as large as a rat, while another species—the *O. Garnattii*—is considerably larger than the first. They are very rapid in their movements when seeking their food, as they do by night, leaping on their hind limbs from bough to bough. It is said that they make nests in the branches of trees, and cover a bed with grass and leaves for their little ones.

TARSIUS—The Malmags. The Malmags inhabit the Moluccas. Only two species are known. They have long, naked tails, feed on lizards, live in pairs, and have the same nocturnal habits as the foregoing.

CHEIROGALEUS—Cheirogales. Three species are ascertained, which resemble the Galagos in their proportions, and the Malmags in the arrangement of their teeth. They are confined to the Island of Madagascar. Of their habits very little is known. They have a round head, short muzzle, and lips with whiskers.

It is curious to observe the gradual departure or descent from the human-like form, which so strongly arrests our attention as we pass through the several families of the Quadrumana, from the Apes to the Lemurs. The power, voluntarily, to imitate the actions of man, is confined wholly to the Simiidae, and ceases with the Oustitis. The Lemurs are active, but have far less intelligence than the monkey-like animals, and no capacity for mimicry. Yet all the branches of this great division present numerous deeply interesting features; and their habits, modes of life, and manifestations of intelligence open a wide field for agreeable study.

ORDER III. CIEIROPTERA.

The word *Cheiropētra*—a compound of two Greek words, meaning *hand* and *wing*—has reference to the peculiar formation of the wings of the several families that compose this order, in which the hands and fingers, and a membrane that unites the last, are so extended as to form wings, which generally surpass in size even those of birds. The Order is distributed into several families and tribes, and these again into numerous Genera, which, in their turn, are resolved into Species, almost innumerable, differing in



PLECOTUS AURITUS.
(The Long-eared Bat.)



RINOLOPHUS FERRUM-EQUINUM
(The Greater Horse-shoe Bat.)



SCOTOPHILUS MURINUS.
(Common Bat or Pipistrelle.)



VESPERTILIO NATTERERI
(The Reddish-gray Bat.)

many particulars, yet bearing a resemblance sufficiently common to make the name *Bat* an appropriate designation for the whole.

BATS.

Bats are the last of the Mammalia that nurse their young at the breast. Their strong, broad wings enable them to fly with great rapidity, and to a considerable height, although in this last particular they cannot equal the Birds. The thumb is short, and armed with a crooked nail, by which they creep along, and cling to the branches of trees, walls, chimneys, &c. Their hinder parts are weak, and divided into five toes, nearly equal in length, which are furnished with sharp, trenchant nails. Their eyes are very small, but their large ears and wings present a membranous surface of extraordinary extent, and of so sensitive a nature as to enable the bats to avoid obstructions in their most rapid flights through their dark retreats. By this peculiar endowment they are warned when they are approaching any foreign body, even though deprived of sight.

They are nocturnal animals, seeking their food in the morning and evening twilight, when they are very lively, flitting among the trees, or skimming along the fields, in pursuit of insects, which they capture with the utmost dexterity. In cold climates, during the winter, when food cannot be procured, they remain in a torpid state; but in the tropical regions, and milder climates of the south, they are active in all seasons. During the day they hide themselves, suspended by their claws, in hollow trees, barns, old chimneys, walls, and caves. They are gregarious in their habits, but have this remarkable peculiarity, that the different species will not associate, nor do the males and females congregate together, nor the young, after they can take care of themselves, with their elders. Disagreeable as they are, and universally regarded with disgust, yet they are entitled to the gratitude of man for the destructive war they wage on many insect tribes which are injurious to vegetation. In size they vary from that of a small mouse to an animal whose expanded wings are nearly six feet in extent. So far as known, they appear to be entirely governed by instinct, exhibiting none of those reasoning powers so conspicuous in the Quadrumanous tribes, and also in many of those that are ranged after them.

The species are so numerous and complicated, and offer so little of special interest, we shall confine our observations to the most remarkable of them.

GENUS PTEROPUS — The Roussetts, or Gholes. These animals belong to the family Harpyidæ, or Frugivorous Bats. They are larger than the Insect-eating Bats, and are the harpies of the old mythology, and possess generally all the characters we have described above. They inhabit the south of Asia, the Moluccas, and Isles of Sunda, and also Africa, Madagascar,

and Japan. One of the most extraordinary of this group is the *Pteropus edulis*, known as the Kalong, or Edible Ghole. These remarkable animals inhabit the Indian Archipelago, where, during the day, they are seen in great numbers hanging from the trees. They are very destructive; and to preserve fruit from their depredations it must be protected by some kind of covering. Their flesh is much esteemed by the natives, who, consequently, hunt and capture them in bags attached to the end of a long pole. They are capable of uttering a prolonged and loud cry, which has been likened to that of the goose. The flesh of the common Ghole (*P. vulgaris*) is said to be very tender, sweet, and palatable.

On account of their large size, sailors call them Flying Dogs. The following graphic description of them is taken from "Meyer's Voyage":—

"Having collected a large number of plants, we left the Island of Talim, to proceed to the little islands of Pancian and Labujo, situated at a short distance from Talim, one of the Philippine Islands. The weather, meanwhile, changed, and the rain fell in torrents; and by the time we reached the Island of Pancian, which was covered with most luxuriant vegetation, it was impossible to effect a landing anywhere. We had observed, at a distance, large pear-shaped bodies, which we at first took for birds' or ants' nests, suspended from the lofty trees that overhung the shores of this little island. The people on shore called to us to fire into the trees, as these supposed birds' nests were nothing less than the gigantic bats, known by the name of the Flying Dogs. We accordingly fired several shots at these thick masses, and the horrible creatures rose, with much exertion and frightful cries, into the air, several of them falling down dead, and others remaining suspended from the branches. The large hooks with which their wings and feet are furnished enable them to cling firmly. They generally double themselves up in a pear-shaped form, and, laying hold of the branches with their hooks, their whole body is thus wrapped up in their wings. We rowed round the island, and, after repeated shots, brought the whole multitude that inhabits the woods into confusion. Such of the bats as had been shot at and fell into the water, dived as soon as we attempted to take them up, and thus we obtained only those which were shot dead upon the spot. After the whole flock had risen again into the air they filled the neighborhood with their hideous cries, and, returning, they flew to the adjacent Island of Labujo. The vermillion eyes of this animal, its large and hideous form, together with its frightful scream, render it one of the most disgusting creatures on the face of the earth. We shot several which measured four feet from tip to tip of the extended wings. They live entirely on fruits, and, as they travel in such immense numbers, they cause considerable damage to the farmers."

In this section of the family of Gholes, or Goblins, twenty-one species have been discovered, all of which are edible; several of the species are said to be well flavored, and entirely destitute of that musky odor which makes most of them so disagreeable to the taste of a European.

The Kiodote Goblin Bat (*Pteropus rostratus*) belongs to the second division of this family, and is the smallest, not often measuring a foot in spread wing. It is of a light red color, tinted with yellow above, light russet beneath; its grinders are remarkably diminutive. It is called the Dog Bat of Java, and subsists chiefly on the fruit of the clove, which is produced abundantly in the gardens of Java and Timor.

GENUS *NOCTILIO*—Hair-lipped Bats. Two species of this group are known, peculiar to South America, one of which,—the Peruvian Bat,—is a very curious animal.

GENUS *VAMPYRUS* (*Vespertilio*, Linn.).—The Vampire Bats belong to the family of *Diphalangia istiophora*, or Two-jointed Leaf-nosed Bats. They are extraordinary animals, of which remarkable stories are related.

The Vampire Bat has the head long and narrow; the muzzle lengthened; the ears middle-sized, separate; the nose with two peculiar appendages, one horizontal, in the form of a horseshoe, the other erect, like the blade of a javelin: it has twenty-four teeth. This bat is distinguished for its blood-sucking propensities. To one of the species, Sphix applied the name *Sanguisuga Crudellissima*,—a very cruel blood-sucker. They do not seem inclined to attack large animals, and never man, only while he is sleeping, when they inflict a small wound in the great toe, without awaking him, and suck the blood in such a way, that when the bat withdraws, the wound remains open, and still continues to bleed. This sanguivorous propensity was long doubted, but is now proved beyond a doubt. The traveller, Waterton, often witnessed its sanguinary deeds. In his work, entitled "Wanderings in South America," the following incident is recorded:—

"I went to the River Panmaron, with a Scotch gentleman, by the name of Tasbet. We hung our hammocks in the thatched loft of a planter's house. Next morning I heard this gentleman muttering in his hammock, and now and then letting fall an imprecation or two, just about the time he ought to have been saying his morning prayers. 'What is the matter, sir?' said I, softly; 'is anything amiss?' 'What's the matter!' answered he, surlily, 'why, the vampires have been sucking me to death.' As soon as there was light enough, I went to his hammock, and saw it much stained with blood. 'There,' said he, thrusting his foot out of the hammock, 'see how these infernal imps have been drawing my life's blood.' On examining his foot, I found the vampire had tapped his great toe. There was a wound

somewhat less than that made by a leech. The blood was still oozing from it. I conjectured he might have lost from ten to twelve ounces of blood. Whilst examining it, I think I put him in a worse humor, by remarking that a European surgeon would not have been so generous as to have bled him without making a charge. He looked up in my face, but did not say a word. I saw he was of the opinion that I had better have spared this piece of ill-timed levity."

GENUS *PHYLLOSTOMA*—The Javelin Bats. The wings of these animals are large, and the interseminal membrane unites the two thighs.

To this genus belongs the notorious Spectre Bat (*Vampyrus spectrum*). of Linnaeus. It inhabits the deep woods and deserted plantations in Brazil and Guiana. It is of the size of a magpie, of a reddish-brown color above, yellowish beneath. It sometimes measures thirty-two inches across the wings; it has thirty-two teeth, and the leaf-like membrane of the nose turned up. It is a ferocious blood-sucker, and has the faculty of running on the ground with more facility than other bats. One of its bloody exploits is thus related by Captain Stedman, in his "Narrative of a Five Years' Expedition against the revolted Negroes of Surinam":—

"On awaking in my hammock, about four o'clock one morning, I was extremely alarmed at finding myself weltering in coagulated blood, and without feeling any pain whatever. The mystery was, that I had been bitten by the Vampire, or Spectre of Guiana, which is also called the Flying Dog of New Spain, and by the Spaniards, Perrovolador. This is no other than a bat of monstrous size, that sucks the blood from men and cattle, while they are fast asleep, even sometimes till they die; and, as the manner in which they proceed is truly wonderful, I shall endeavor to give a distinct account of it.

"Knowing, by instinct, that the person they intend to attack is in a sound slumber, they generally alight near the feet, where, while the creature continues fanning with his enormous wings, which keeps one cool, he bites a piece out of the tip of the great toe, so very small, indeed, that the head of a pin could scarcely be received into the wound, which is, consequently, not painful: yet, through this orifice he continues to suck the blood until he is obliged to disgorge. He then begins again; and thus continues sucking and disgorging until he is scarcely able to fly, and the sufferer has often been known to pass from time to eternity. Cattle they generally bite in the ear, but always in places where the blood flows spontaneously. Having applied tobacco ashes, as the best remedy, and washed the gore from myself and hammock, I observed several small heaps of coagulated blood on the ground, all round the place where I had lain; on examining which, the surgeon judged that I had lost at least twelve or fourteen ounces of blood."

The Cordated Bat of the Old World belongs also to the same family of blood-sucking animals. It inhabits Java. It has an oval, or cordate appendage to the nose; is about four inches long, and of a mouse or russet color.

GENUS PLECOTUS — Long-eared Bats. These animals have ears more than twice the length of the head.

The Long-eared Bat (*Plecotus auritus*) is the best known representative of this genus. It abounds in France and England, where it inhabits houses and kitchens, being of a docile nature, and is easily tamed. It is readily distinguished, by its extremely long ears, from all other bats. The fur is long, fine, and silky, of a dusky brownish gray above, and yellowish gray beneath. The delicate membrane that includes the limbs and tail is of a dusky hue. It flies with a fluttering, shuffling motion, but rises with facility from the ground, or even from the bottom of a box in which it may have been kept. When it alights, it clings by the hooks of its fore limbs and by its hind claws. It adheres to the slightest asperities, and retires to the corners of the deserted apartments of old buildings, steeples, and the crevices of rocks, where it suspends itself by the hind feet, which are, as in other bats, eminently adapted to the purpose, the claws being very acute, and nearly of equal length. When springing off from a wall, it raises its fore legs first, stretches out its head, and erects its ears, which had been folded down, and it retains them erect when flying. When preparing for repose, it brings the fore feet close to the body, the cubital joint projecting, and, in contact with the knee, incurvates the tail, folds up the lateral membranes neatly, and brings the ears backwards, curving them along the side of the head and body, so as to resemble a ram's horn, the tragus, or small anterior appendage, projecting forward. Its voice is a low chirping squeak, and, when frightened, it utters a querulous note, resembling the wailing of a very young child.

GENUS GALEOPITHECUS — The Colugos. The Galæopithecæ are not so well known as most of the other genera of this order.

The Colugos exhibit considerable differences from the Bats proper, in having their fingers, which are armed with trenchant nails, no longer than the toes, so that the membrane which occupies their interval, and extends to the sides of their tail, can only serve as a kind of parachute. Owing to much similarity in structure, many naturalists range them with the Lemurs in the Order of Quadrupedæ. They were called by Linnaeus *Lemur volans*, — Flying Lemurs. They live on trees in the Indian Archipelago, and subsist on insects and birds, and probably fruits. By means of the parachute membrane, they glide or leap from tree to tree the distance of a hundred yards.

There are several species, all of which should be classed with the Lemurs, to which tribe they show a closer affinity than they do to the Bats.

The species the most widely distributed over the eastern portions of the United States is the

BROWN,* OR CAROLINA BAT—*Vespertilio Carolinensis*.

This is the species we most often see flitting about the streets and over the houses of the cities, and about the forests and fields of the country. Several specimens that I at one time kept as pets, furnished much interesting information regarding their habits.

During the daytime they remain perfectly still, their little eyes shut, their wings folded, hanging by the claws of the hind feet.

If they were disturbed during the day, they opened their mouths, bristling with fine teeth, and emitted a chattering, melancholy shriek. If a fly or other insect, or small piece of meat were put in their mouth, they almost invariably swallowed it after masticating it a little. If much disturbed they left their perch, and, after flying about the room for a few moments, again alighted on another convenient resting-place. It will be remembered that the vision of these animals is, in daylight, very defective; they are essentially nocturnal in their habits; but when flying about the room, though there were many objects hanging from the walls, and chairs and tables, and other furniture were in the room, not once have I known a bat to strike against them, or against the walls or ceiling. They were guided entirely by their exquisite sense of hearing, and that of touch in the membranes of their wings.

When twilight commenced, my pets were all activity, and through the greater part of the night seemed busily engaged in catching the flies that were on the ceiling and walls of the room. If a lamp were lighted, they generally, after a few moments of nervous flight, reoccupied their perches, but if all were still, they soon resumed their insect hunt.

Notwithstanding I have had quite a number of these animals at different times, and kept them sometimes through a period of five or six weeks, I have never been able to detect any considerable amount of intelligence in them. After a while they became accustomed to being handled, and would lie passively in the hand. I think that they were able to recognize me from a stranger, as they seemed less uneasy when handled by myself; but as for affection, they seemed entirely destitute of it. Other animals, when fed and cared for, will in time recognize and seem pleased at the company of their

* This interesting description of the *Carolina Bat* is from the pen of Edward A. Samuels, Esq., author of "Ornithology of Massachusetts."

keeper. I have known a gray squirrel to really pine for my company after having been in my possession but a few days, and have known a flying-squirrel to recognize its keeper, and approach him with manifestations of pleasure, at the fifth or sixth day after capture; but the bats seem to have but little preference for any person or thing, and are as well contented in the possession of one person, or in one home, as another.

Our bats are all insectivorous, and also nocturnal in habits.

If we take our position in the neighborhood of an old, ruined dwelling, or the dilapidated walls of a church, or the rocky fastnesses of a cave, at the approach of dark, we see great numbers of these animals issuing forth from these retreats, and soon busying themselves in the pursuit of their insect prey. Not a moth or beetle shows itself winging its flight through the air, seeking a safe and suitable place for the deposit of its eggs, the germs of future noxious broods, but, as quick as thought, a bat seizes it, and soon the morsel is appropriated to its never-satisfied appetite.

In a short time the insects near the surface of the earth are captured, and the bats take wider and higher circles in the pursuit of their prey. Silently they labor; their wings make no sound upon the air; their voices are hushed; but they are all the more busy, and for the benefit of man, too, their greatest enemy. Multiply the myriads of injurious insects each bat kills in the hours of a single night, by the myriads of bats thus employed, and we can see at a glance the purpose for which they are intended by the Creator.

ORDER IV. INSECTIVORA (Insect-Eaters).

The Bats terminated the Orders of Mammals which have the mammae or teats upon the breast. In those that follow they are abdominal. In common, however, with the *Cheiroptera*, the Insectivora have their grinders entirely covered with conical points, are nocturnal in their habits, or burrow in the earth; subsist on worms, insects, and larvae, and pass the winter in a state of lethargy. They have no lateral membranes, but the clavicles are always present. They are generally *plantigrade*, i. e., place the whole bottom of the foot upon the ground while running, and have mostly an elongated muzzle.

This Order of animals has been variously arranged by naturalists, but we have preferred, for the sake of convenience, to divide it into three families,—the *Talpidae*, or Moles; the *Soricidae*, or Shrews; the *Erinaceidae*, or Hedgehogs.

I. TALPIDÆ—MOLES.

These animals are noted for their subterranean life, and the remarkable manner in which they are fitted for it. They are diggers and miners, and consequently are provided with short arms, attached to long and large shoulder-blades, supported by strong clavicles, strengthened by powerful muscles, and terminating in large hands, the palms of which are invariably turned either outwards or backwards. The lower edges of the hands are trenchant, and the fingers almost imperceptible, yet they are armed with long, flat, and sharp claws. In progressing through the earth the fore paws are thrust forward as if in the act of swimming, and the loosened dirt is pushed backwards out of the animal's way. The head is pushed forward, and the long, flexible nose assists in opening a path. The muscles of the neck are also extremely powerful. The hinder parts of the body are weak, and the progression of the animal above ground is as slow and awkward as it is rapid and easy beneath the surface.

The Mole is endowed with an acute sense of hearing, and although the eyes are so small and hidden as to be nearly invisible, it has been ascertained that it is by no means deficient in sight.—This family is ranged under four genera.

GENUS TALPA—Moles Proper. This group is resolved into a few species, of which the Common Mole (*Talpa Europaea*) is the most widely diffused, and the best known. The fierceness of its temper, the voracity of its appetite, the wonderful talents it exhibits, as a miner and engineer, in constructing its underground fortresses, ditches, and highways, combine to give this animal an extraordinary character. It has a pointed snout; its fur is velvety-black; its tail is short and hairy, and the voice small, but shrill. In length it measures nearly six inches.

It is said the males are more numerous than the females, and, on this account, the former often engage in desperate encounters. The number of young produced at a time varies from three to seven. The nest is placed beneath a large molehill, and is formed of grass, leaves, and other vegetable substances. A Frenchman, of the name of Le Court, devoted his whole life to a study of the domestic habits of this animal, and to him we are indebted for the following curious particulars:—

THE MOLE AS AN ENGINEER AND MINER.—The food of the Mole consists chiefly of earth-worms, in search of which it burrows its way in the soil, extending its subterranean excursions in proportion as its prey diminishes in number. To facilitate this pursuit, it excavates a series of runs or galleries, along which it can walk without inconvenience, and from

different points of which it proceeds, forcing its way into the hitherto unperforated soil. In forming its subterranean paths, it works with its fore feet, which, as has been seen, are admirably adapted for scraping away the earth, and throwing it backward, moving itself forward by the hind feet. When it has thus excavated an extended series of walks, it can run along them to any point without difficulty, and finds security in them from the pursuit of many enemies, although man employs them as a sure means of entrapping it.

In prosecuting these labors, it appears that each individual appropriates to himself a district, or space of ground, in which he forms a kind of fortress under a hillock raised in some secure place, as beneath a bank, or near the roots of a tree. In this eminence, of which the earth is rendered very compact, is formed a circular gallery, communicating with a smaller one placed above it by several passages. On the level of the lower or larger gallery is a roundish chamber communicating with the upper by three passages. From the outer gallery branch off a number of passages, which run out to a variable extent, and, forming an irregular curve, terminate in what may be called the high road, which is a long passage proceeding from the outer circular gallery, and at the same time communicating directly with the central chamber. It extends to the farthest limit of the domain, is of somewhat greater diameter than the body of the mole, has its walls comparatively compact, and communicates with the numerous passages by which the domain is intersected. By this principal passage the mole visits the various parts of its hunting-ground, excavating on either side, and throwing out the earth here and there, so as to form heaps, or molehills. The excavations vary in their distance from the surface according to the nature of the soil, and other circumstances. In deep, rich earth they are sometimes nearly a foot in depth, while in gravelly or clayey ground, covered with a thin layer of soil, they are often scarcely an inch. The mole, also, often burrows quite close to the surface of rich, loose soil, which has been ploughed, and sometimes runs along it, forming merely a groove or trench. During winter, when the cold forces the worms deeper into the ground, it follows them to their retreats, driving its galleries and alleys to a corresponding depth. At this season it retires at intervals to its fortress, in which it has formed a bed of dry leaves and grass; but in spring it quits this habitation, and rests during the warm season in a molehill.

Notwithstanding the mole destroys immense numbers of worms, and other insects hurtful to vegetation, it is, in many localities, regarded with disfavor by the gardener and nurseryman, because, in its subterranean wanderings, it destroys the beauty of their flower-beds and borders; but the animal never eats vegetable food.

"As active as stealthy," says M. de la Faille, "it continually shifts its domicile from one place to another, overcoming every obstacle, such as walls, ditches, and canals; and, to avoid perishing in the water, or wasting its strength on intrenchments, which often intercept its passage, it knows how, by a wonderful industry, to work its way, at a very great depth, under rivers and broad foundations. Should it meet with an insurmountable impediment, it, almost like a human engineer, explores the ground, examines the ways, winds round hills or rocks, and employs all the resources of his science to open up a path. But it is a destructive enemy, that never marches without spreading desolation wherever it passes."

On account of the injury which it causes, it finds in man a persistent and relentless enemy, who pursues it with every means that can insure its destruction. Various traps and snares have been invented for this purpose, by means of which large numbers are annually destroyed.

This mole is found in all temperate climates.

The Purple Mole (*T. purpureuscens*) is found in Virginia. The Italian Mole (*T. cœca*) mentioned by Professor Savi, is said to be without eyes. Some naturalists, however, doubt this.

GENUS SCALOPS. — One species only is known — *Scalops Canadensis*. It resembles the Common Mole in appearance, and the Water Shrew in habit; is found in all parts of North America.

GENUS CHRYSOCHLORIS — Shining Moles. Three species are known, all of which, we believe, are African.

GENUS CONDYLURA — Radiated Moles. These animals, common in the United States, differ from the Common Mole in the length of their tail, which is longer, and by certain peculiarities of the muzzle. The nostrils are surrounded by twenty-two small cartilaginous and movable points, forming a kind of double star when expanded circularly. There are three species. The Radiated Mole of North America (*Condylura cristata*) is a remarkable little animal, about four inches long, with eleven points round each nostril, forming the double star. The muzzle is rose-color, the feet white, and the fur black.

C. longicaudata — Long-tailed Radiated Moles are well known. This species is considerably larger than the former, but the radiated apparatus on the snout is small; its color is a rusty-brown; inhabits North America. — The series of the Talpidae closes with the Thick-tailed Radiated Mole (*C. mucronata*) of Harlan.

II. SORICIDÆ — SHREWS.

GENUS MYGALE — The Desman (*Sorex moschatus*, Linn.). This animal is described as having the nostrils placed within two prolonged

tubes, forming a kind of proboscis, which is very sensitive, and always in motion. The feet are *pentadactylus*, and those of the hinder limbs webbed. The Desman resides near watery places, digs subterranean galleries like the Mole, extending from beneath the water, but rising farther on, so as never entirely to fill. It is an aquatic animal, swims with the greatest ease, remains long below seeking for leeches and insects, and never voluntarily comes ashore, but is often taken in the nets of fishermen. It emits a strong odor of musk.

The Moscovite Desman (*M. moscovitica*) has all the feet webbed; equals or surpasses the rat in size; constructs galleries of great length; has very small eyes, and is of a brown color above, white beneath. In the water its progression is easy and rapid, but difficult and slow on the land. It inhabits the region south of the Volga. There is a European species found in France, but we have not been able to learn anything of its habits.

GENUS *SOREX*—The Shrews. Belonging to this genus are several species of very small animals, some of them, indeed, being the most diminutive of the Mammalian family. They live in holes dug by themselves, seldom appearing abroad, except towards night. They have short, rounded ears; eyes, small; toes, weak; tail, compressed towards the end, or tetragonal. They feed on worms and insects.

Sorex tetragonurus—Common Shrew. This animal is about two inches in length; gray above, paler below; has the tail shorter than the body, and square; inhabits Europe; in the summer dwells in holes, and in winter nestles under haystacks. It is common in England and Scotland, where the absurd notion prevails among farmers, that should a Shrew run over the leg of a horse or cow while reposing among the grass, it will cause lameness, on which account they invariably kill it when opportunity offers. On the contrary, however, it is a very inoffensive creature, living exclusively on insects, and deserves to be protected rather than destroyed. A singular mortality occurs among this species in the summer, large numbers of them being often found dead, the cause of which has never been ascertained. Captivity and confinement appear to increase their combative propensities; for if two are confined in a box together, the stronger will soon kill and devour the weaker. Another species is *S. remifer*—the Oared Shrew. The animals of this species are black above, blackish-gray beneath; the colors blended on the sides; feet and tails ciliated with bristles. Their length, including the tail, is five inches and a quarter. Nothing is known of the habits of this species, but the conformation of the feet would indicate a similarity in this respect to the following.

S. fodiens—the Water Shrew. This animal is distinguished by a blackish-brown color, white beneath; feet and tail ciliated with bristles.

Like the mole, it is a miner and skilful engineer, and constructs curious galleries near ponds and streams to which they lead. In its habits it is extremely aquatic, swimming with two thirds of the body out of water, and diving with ease to the bottom, in pursuit of worms and insects, on which it exclusively subsists. Its length, including the tail, is five inches and a quarter. An interesting account of the Water Shrew is furnished by Mr. Dovaston: "On a delicious evening far in April, 1825, a little before sunset, strolling in my orchard, beside a pool, and looking into the clear water for insects I expected about that time to come out, I was surprised by seeing what I momentarily imagined to be a *Dysticus marginalis*, or some very large beetle, dart with rapid motion, and suddenly disappear. Laying myself down cautiously and motionless on the grass, I soon, to my delight and wonder, observed it was a mouse. I repeatedly marked it glide from the bank, under water, and bury itself in the mass of leaves at the bottom: I mean the leaves that had fallen off the trees in autumn, and which lay very thick over the mud. It very shortly returned, and entered the bank, occasionally putting its long, sharp nose out of water, and paddling close to the edge. This it repeated at very frequent intervals, from place to place, seldom going more than two yards from the side, and always returning in about half a minute. I presume it sought and obtained some insect or food among the rubbish and leaves, and retired to consume it. Sometimes it would run a little on the surface, and sometimes timidly and hastily come ashore, but with the utmost caution, and instantly plunge in again. During the whole sweet spring of that fine year, I constantly visited my new acquaintance. When under water he looks gray, on account of the pearly cluster of minute air-bubbles that adhere to his fur and bespangle him all over. He swims very rapidly, and, though he seems to *dart*, his very nimble wriggle is clearly discernible."

In addition to the above, ten other species have been discovered, but their domestic habits have not been clearly ascertained.

III. ERINACEIDÆ—HEDGEHOGS.

This family is confined exclusively to the Eastern Continent and the contiguous islands. In this group we find the fur gradually passing from a bristly to a spinous character, very similar to a corresponding family—*Porcupines*—among the Rodentia.

GENUS CENTENES—Tenrees. These animals are covered with spines, and have an elongated and very pointed muzzle, but are destitute of a tail. In habits they are nocturnal, and although inhabiting the tropical regions, pass three months of the year in a torpid state. They are chiefly from Madagascar, and are sometimes called Madagascar Hedgehogs. Three

or four species of these animals are known. The *Centetes setosus*, or Bristly Tenrec, is of a brown color, and surpasses the hedgehog in size; *C. armatus*, or Armed Tenrec, has a shorter, thicker head, larger ears; is of a light color, and covered with spines; the *C. semispinosus*, or Half-spined Tenrec, is of the size of a mole, striped with yellow and black; has spines and hairs intermingled, and a long, pointed muzzle.

Maegillivray has constructed a minor group, to which he gives the generic name *Ericulus*. Here we find the *Ericulus nigrescens*, or Negro Tendrac, and *E. spinosus*, a small species distinguished by its long, white head and dark back.

GENUS ERINACEUS — The Common Hedgehog (*Erinaceus Europeus*) bears some resemblance, particularly in the back and snout, to a pig, from which circumstance it derives its name. It is a small animal, about ten inches in length, having a short tail, and the upper part of the body entirely covered with sharp quills or spines. These, together with a peculiar muscular arrangement of the skin of the back, by which it is enabled to assume the form of a ball, furnish it with a sure defence against all aggressors but man. When attacked, it instantly transforms itself into a kind of *chevaux-de-frise*, by rolling itself into a ball-shape, presenting everywhere a surface of sharp spines, in which panoply no animal will be rash enough to assail it. It is said to be able to devour large numbers of the poisonous fly, known in medicine as *cantharides*, without any ill effects, whereas a single one will kill a dog or a cat. The stiff hairs of the lower parts are yellowish, and the woolly, brownish-gray. It constructs its burrow generally under the roots of an old tree, or on a bank, or in the cleft of a rock, where it reposes during the day. At night it goes forth in pursuit of food, which consists chiefly of snails, larvae, reptiles, eggs, and fruits. In its diet, however, it may be said to be omnivorous. It is capable of domestication, and is kept in many houses and gardens in England to destroy cockroaches, slugs, &c., and to assist in the kitchen, by turning the spit on which meat is roasting, which service it is said to perform as well as the Turnspit Dog. It is fond of fruits, but it has not the faculty of loading the prickles of its back with them, and thus carrying them off; nor does it suck the teats of cows and goats at night, as Aristotle, Pliny, Buffon, and others have asserted.

As winter approaches, the Hedgehog retires to its burrow, where it has prepared a nest of dry leaves and grass, rolls itself up into a ball, and falls into a slumber, which lasts until the spring is far advanced. Several other species are enumerated, all of them belonging to the Old Continent.

GENUS GYMNURA — Oriental Hedgehogs. One species — Raffle's Gymnura (*G. Rafflesii*) — is well ascertained. The general color is black,

head and neck whitish, a black streak passing on each side from the nose through the eyes; has a very elongated snout, round ears, a long tail, white at the end.

GENUS CLADOBATES.—The Tupaias. These animals are nimble little creatures, and when running, and sporting on trees, might be mistaken for squirrels, but that their long, sharp muzzle distinguishes them even at a distance. The species known are the *Tupaias tana* and *T. ferruginea*, belonging to the Australian Islands.

ORDER V. THE CARNIVORA.

THE BUTCHERING AND FLESH-EATING ANIMALS.

The dentition of these animals harmonizes with their sanguineous appetite, furnishing the instruments necessary for its gratification. They have, invariably, four stout and long separated canines, between which are six incisors to each jaw, of which the second inferior are inserted a little more inward than the rest. The molars are either entirely trenchant, or have some blunted tuberculous parts, but have no sharp conical projections. The appetite for flesh and blood is stronger in proportion as the teeth are more exclusively trenchant; and by a comparison of the tubercular surface of the teeth with the cutting portion, may be determined the degree to which the carnivorous propensity prevails in animals. The anterior molars are the most trenchant; next follows a molar larger than the others, which has usually a tuberculous projection differing in size; and then follow one or two smaller teeth that are entirely flat. It is with these latter that the dog chews the herbs which he sometimes swallows.

Cuvier designates this large upper molar and the opposite one below *carnivorous* teeth; the anterior pointed ones *false molars*, and the posterior blunt ones *tuberculous molars*. Those genera which have the shortest jaws are best adapted for biting.

The hind feet also require examination. Some rest the whole sole on the ground when walking, which circumstance is generally indicated by the absence of fur on that part. These are called *Plantigrades*. Other genera walk on the toes, with the tarse elevated. These have a more rapid gait, and are called *Digitigrades*. To this primary difference are added many others in the habits and even internal conformation of animals.

This Order is divided into six families, at the head of which we prefer to place the

CANIDÆ—THE DOGS.

This numerous and widely extended family of digitigrade animals, comprises species, which, although placed by likeness of anatomical and dental

structure, in the same family, have little or no similarity in what may be called the moral and mental qualities. While the anatomy, or osseous structure of the wolf and Shepherd's Dog is so exactly similar that naturalists cannot tell from an examination of the bones whether they belonged to the one or the other, the moral and intellectual differences that distinguish them are of most marked character. An immeasurable distance, for example, divides the fierce and only half-tamable wolf and the ferocious and intractable hyena on the one hand, from our gentle, intelligent, and faithful domestic dogs on the other. And yet some naturalists have done the dog the injustice to propose the theory, that he is a descendant of the wolf or the hyena, or possibly of both. The question of the origin of domestic dogs has been largely discussed, but we have not been able to find in any Natural History a resolution of it which is entirely free from objection.

It has been well said that dogs have innate qualities, such as the keenness of scent, and natural impulse to chase, as in the Hound; the ardor to seek, and the desire of finding, as in the Spaniel and Pointer; and the turn for watching and guarding, as in the Mastiff and Sheep Dog. These are natural, not artificial qualities, developed in given directions by education, and cannot be transferred to other races at will. And above all they have moral attributes, strong and enduring affections, fidelity, gratitude, benevolence, and an intelligence almost human, all which are inborn, and not the result of education; attributes, in a word, which no discipline could ever impart to the hyena, the wolf, or the jackal. No mode has ever been discovered by which a hyena may be tamed; and the jackal has not exhibited much tractability. A few instances are recorded of wolves having been domesticated, and showing attachment to their master like the dog, whence it has been conjectured that the wolf may have been his progenitor, crossed with the jackal, the fox, and hyena. Now, it is not supposable that a superior race can spring from an inferior, and it is difficult to believe that so noble an animal as the dog could have had an origin so ignoble. The original race or races of dogs must have possessed the same high qualities that distinguish their descendants to-day. To affirm that the dog is a civilized wolf, is as absurd as to assert that the intelligent Caucasian is an off-shoot from, and an improved species of, the negro race.

But there is another remarkable peculiarity of the domestic dog which must not be overlooked. We mean his capacity for civilization and domestication *as a race*. Herein is seen his superiority to, and his *absolute distinctness from*, all those animals with which it has been said he is so nearly related. Individual wolves have been tamed, as well as many other animals, but the *race, as a race*, cannot be subdued to civilization; the dog, on the contrary,—the whole race has been the constant companion of man

from the remotest ages. He has given himself entirely to man, dwells with him, hunts with him, defends him, at the same time claiming protection from him, and at last, dies in his society. History makes no mention of him in any other condition. There must originally have been several species possessing the moral attributes which are now so marked, and from them the many varieties, so well known, were undoubtedly produced. Speculations on the origin of the dog, which go farther than this, can only end in confusion. We introduce here some observations of Charles Hamilton Smith touching this point, and which seem to admit the conclusions arrived at above:—

" We leave it to physiologists to inform us of the facts, if such there be in the whole circle of mammiferous animals, where the influence of man, by education and servitude, has been able to develop and combine faculties and anatomical forms so different and opposite as we see them in different races of dogs, unless the typical species were first in possession of their rudiments. We do not pretend to deny a certain influence to education even on the external form, nor that servitude and misery will produce some corresponding decrease of size. But climate cannot have effected much difference in the growth, since the two extremes are found both in hot and cold countries.

" Nor can food have had a material influence, since man, existing entirely on vegetables, or on fish, retains all of his faculties as well as when he subsists on flesh; and to a late period in the history of Europe, the fiercest dogs, such as the packs kept by the feudal nobility for boar and wolf hunting, were invariably fed on bread. If the dog proceeded solely from one typical species, allowance being made for some modifications as above specified, all his developments would continue within the circle of powers and faculties belonging to the original type. They might diminish, but increase only in a trifling degree.

" We may infer that food or climate would not truncate and widen the muzzle, nor raise the frontals, nor greatly alter the posterior branches of the lower jaw-bone, as in Mastiffs. It would scarcely have the effect, in other cases, of producing a high and slender structure, while it took away the sense of smelling, and several of the best moral qualifications resulting from domesticity and education, as occur in Greyhounds. All these qualities appear to us indications of different types, whose combinable properties have enabled man to multiply the species of dogs into the several races his wants required.

" In these views we expect to have the concurrence of all sportsmen who have studied the characters of the animals more than the books of systematic writers, and are led by inferences from their own observations, rather

than by the authority of names. We know it to be the opinion of foresters and huntsmen of the north and east of Europe, men generally well educated, who live wholly in the presence of Nature. We are assured it is the doctrine of the Chinese and Tartars, particularly in the notice on dogs in the treatise on hunting, under the names of Id, Ist, and Kuschuk. We know, from personal inquiry, that both the North and South American Indians do not doubt their dogs being of the same origin with the wild canines of their forests; and, lastly, we may point to the text of Baron Cuvier, where, bearing in mind that he made it a law not to assert as fact that which he had not verified by personal inspection. Speaking of dogs as a species, he nevertheless admits that 'some naturalists think that the dog is a wolf, others that he is an educated jackal: dogs, however, which have become wild, resemble neither the one nor the other.' He then notices the Matin, a breed not known in England, but approaching our great Farm-yard and Drover Dogs, as possessing a skull most similar to that of the wolf, though the ears are drooping. Farther on, speaking of the jackal, he says, 'It is a voracious animal, which hunts after the manner of dogs, and appears to resemble them more than any other species, both in form and susceptibility of education.'

"In conclusion we may assume, that man being created for higher purposes than a mere animal existence, subordinate creatures, so constituted as to be important elements of coöperation, were called into existence to further that design, and to facilitate his intellectual advancement. Among others, the canines were endowed with faculties of a peculiar nature in aid of his exertions, and in compensation for the physical inadequacy of his structure, to compete with the fiercer tenants of the world. How the brute creation was at first distributed, we never can ascertain; but we may conjecture, judging from that balance which we may trace is kept up in organized matter, vegetable as well as animal, that all the classes and orders must have been coexisting from the beginning in such proportions that none had so decided a preponderance in either kingdom of nature as to outweigh and destroy others, or even to exceed their useful quantity. And here again we find an exception; for to man alone it was given, in proof of his higher destinies, to violate this law for his convenience; to diminish, to exterminate whole species of animals, clear whole regions of forests, banish whole classes of plants, and supply their places by multiplying those creatures and that vegetation necessary to his own comfort, and converting a wilderness into cultivated regions for his benefit, without disturbing the harmony of the creation; unless in the duration of ages, and in obedience to other laws, whose periods of operation we are not competent to measure."

Without, therefore, recapitulating the various arguments adduced in the foregoing pages, we are inclined to believe there are sufficient data to doubt the opinion that the different races of domestic dogs are all sprung from one species, and that species the wolf or jackal. When the intellectual endowments of the domesticated races of dogs are permitted to weigh in the scale,—when we begin to consider the faculties which the bounty of Nature has bestowed upon them,—the sincerity and disinterestedness of their attachment,—the sagacity, strength, velocity, courage, and perfect obedience which they proffer to man,—we cannot refuse our admiration and affection. To what other species could we look for voluntary association with our fortunes? Which of them would, like the dog, lend us the full use of senses so acute as his? Which can rejoice in our joy, be vigilant and bold in our defence, obedient to our order, faithful in our adversity, understand our least words and signs, and die on our graves from pure attachment? These qualities, we all know, dogs possess. Here, then, we find the source of that consideration which is granted them by all men near a state of nature; and although conceded by them with niggardly hands, the wild man of the Old World, the stoical hunter of the New, the half-frozen Esquimaux, and the savage of Australia, differ only in their mode of acknowledgment, from the expressions of favor with which the drover, the shepherd, the sportsman, and the fine lady of civilized society regard them.

As the dog alone, of all the brute creation, voluntarily associates himself with the conditions of man's existence, it is fair to presume also that he was the first, and therefore the oldest of man's companions; that to his manifold good qualities the first hunters were indebted for their conquests and subjugation of other species. We do even now perceive, notwithstanding the advance of human reason and the progress of invention, that in a thousand instances we cannot dispense with his assistance.

The great advantage derived from these various powers in different races of dogs is well appreciated in our state of civilization, but still it is not nearly of such importance here as it is among those that journey in the wild regions of the world. Mr. Burchell, in his African Travels, illustrates this fact no less elegantly than correctly:—

"Our pack of dogs," says that enterprising naturalist, "consisted of about five and twenty, of various sorts and sizes. This variety, though not altogether intentional, as I was obliged to take any that could be procured, was of the greatest service on such an expedition, as I observed that some gave notice of danger in one way and others in another. Some were more disposed to watch against men, and others against wild beasts. Some discovered an enemy by their quickness of hearing, others by that of scent;

some for speed in pursuing game; some were useful only for their vigilance and barking, and others for their courage in holding ferocious animals at bay. So large a pack was not, indeed, maintained without adding greatly to our care and trouble in supplying them with meat and water, for it was sometimes difficult to procure for them enough of the latter; but their services were invaluable, often contributing to our safety, and always to our ease, by their constant vigilance, as we felt a confidence that no danger could approach us at night without being announced by their barking. No circumstances could render the value and fidelity of these animals so conspicuous and sensible as a journey through regions which, abounding in wild beasts of almost every class, gave continual opportunities of witnessing the strong contrast in their habits,—between the ferocious beasts of prey which fly at the approach of man, and these kind, but too often injured companions of the human race. Many times, when we have been travelling over plains where those have fled the moment we appeared in sight, have I turned my eyes towards my dogs to admire their attachment, and felt a grateful affection towards them for preferring our society to the wild liberty of other quadrupeds. Often, in the middle of the night, when all my people have been fast asleep around the fire, have I stood to contemplate these faithful animals lying by their side, and have learned to esteem them for their social inclination to mankind. When wandering over pathless deserts, oppressed with vexation and distress at the conduct of my own men, I have turned to these as my only friends, and felt how much inferior to them was man when actuated only by selfish views.

"The familiarity which subsists between this animal and our own race, is so common to almost every country on the globe, that any remark upon it must seem superfluous; but I cannot avoid believing that it is the universality of the fact which prevents the greater part of mankind from reflecting duly on the subject. While almost every other quadruped fears man as its most formidable enemy, here is one which regards him as his companion, and follows him as his friend. We must not mistake the nature of the case: it is not because we train him to our use, and have made choice of him in preference to other animals, but because this particular species feels a natural desire to be useful to man, and from spontaneous impulse attaches itself to him. Were it not so, we should see, in various countries, an equal familiarity with various other quadrupeds, according to the habits, the taste, or the caprice of different nations. But everywhere, it is *the dog* only that takes delight in associating with us, in sharing our abode, and is even jealous that our attention should be bestowed on him alone; it is he who knows us personally, watches for us, and warns us of danger. It is impossible for the naturalist, when taking a survey of the whole animal

creation, not to feel a conviction, that this friendship between two creatures so different from each other, must be the result of the laws of nature; nor can the humane and feeling mind avoid the belief, that kindness to those animals from which he derives continued and essential assistance, is part of his moral duty."

We give here a synopsis of the Subgenus *Canis*, or Dogs proper:—

The teeth of the *Canidae* consist, in the upper jaw, of six incisors, two canines, and six molars, on each side; of which number, three are false molars, one is the carnivorous tooth, and two are tubercular molars. There are also six incisors, two canines, and seven molars on each side in the lower jaw; four being false molars, one carnivorous, and two are tubercular. The incisor teeth are small, and the molars irregular and somewhat projecting. Dogs have the muzzle greatly varied; ears pointed or rounded and pendulous; eyes horizontal, full, prominent, pupils always round; tail never reaching to the ground, in general bent upwards; fur, long or short; being of all colors, with tendency to form spots; mammae varying from six to ten; feet, in some partially webbed, in others with a fifth toe, and claw on the hind legs as well as on the fore; voice barking, capable of very varied expression; intellectual instincts variously developed; domesticity voluntary.

FERAL OR WILD DOGS (*Canes Feri*).—These are domestic dogs which have returned to a wild state. In appearance they are between the Wolf and Cur. The principal representatives of this class are, the Feral Dog of Natolia (*Canis ictinus*); the Feral Dog of Russia (*C. fossor*); the Feral Dog of St. Domingo (*C. Haitensis*), and the Feral Dog of the Pampas (*C. Campivagus*).

FAMILIAR DOGS (*Canes Familiares*).—These have the head elongated, the lower jaw on the same line with the upper molars. Inhabited originally the northern and temperate zones north of the equator. This tribe may be divided into six sections:—

SECTION I. THE WOLF DOGS (*Canes Lachnei*).—These are densely clothed with long hair; originally all with pointed ears. Inhabit nearest the Arctic Circle in both continents; sagacious and laborious; stature large; color black and white. In this section we find the Siberian Dog (*Canis Sibiricus*), Kosha of the natives; the Esquimaux Dog (*C. Borealis*); the Iceland Dog (*C. Islandicus*); the Hare Indian Dog (*C. Lagopus*); the Newfoundland Dog (*C. Terre Novae*); the Nootka Dog (*C. Laniger*); the Aleo (*C. Aleo*); the Sheep Dog (*C. Domesticus*); the Great Wolf Dog; Calabrian Dog; the Alpine St. Bernard Dog, and the Pomeranian Dog (*C. Pomeranus*).

SECTION II. WATCH AND CATTLE DOGS (*Canes Laniarii*).—These

have the skull very like the former; stature generally very large; fur short; instinct of watching; moderate sagacity and power of smelling; are not very docile; have ears erect, or partly turned down. Inhabited originally the temperate zone of the northern hemisphere. To this division belong the Turkman Watch Dog; the Suliot Watch and Boarhound (*C. Sulillus*); the Molossian Dog; the Danish Dog (*C. glaucus*); the Matin Dog (*C. Laniarius*); the Cattle Dog of Cuba; the Primitive Lurcher; the Native Indian Carrier Dog; the Techichi; the Wolf Dog of Florida; the Dog of the North American Indians.

SECTION III. HUNTING DOGS: THE GREYHOUNDS (*Canes Venatici*).—Have skulls like the former, but the plane of the head more rectilinear; stature high; chest deep; loins arched; abdomen drawn up; tail long and slender; ears small, pointed, mostly turned back and down; small powers of scent; little sagacity and personal attachment; great swiftness; color white, black, and slatey; they hunt by the sight. Inhabited originally the temperate and warm zones of the northern hemisphere of the old continent to the tropics. The races with long fur are the Brinjaree Dog of India; the Persian Greyhound; the Arabian Bedoueen; the Prussian and Turkish Greyhound (*Canis hirsutus*); the Scottish Greyhound (*C. Scoticus*); the Irish Hound, largest of all (*C. Hibernicus*); the Greek Greyhound (*C. Graius*). The races with smooth fur are the Turkish Long-eared; the Egyptian Smooth Greyhound; the Bedoueen Aeba Greyhound; the Italian Greyhound (*C. Italicus*); and the British Greyhound (*C. leporarius*). The mongrel races are the Present Lurcher (*C. vertagus*); the Egyptian Street Dog; the Hairless Dog, and the Turkish Naked Dog.

SECTION IV. THE HOUNDS (*Canes sagaces*).—Skull moderately elongated; parietals not approximating, but expanding, admitting a larger development of brain; ears rounded, pendulous; great olfactory power; great sagacity; middle stature; strong and elastically shaped; tail turned up; livery white and brown in spots, or white and black. Inhabit temperate regions of the old continent. Races with short fur are the following: The Bloodhound (*Canis sanguinarius*); the Oriental Hound; the Talbot; the old Southern Hound; the Staghound; the Foxhound; the Harrier; the Beagle; the Turnspit; the Burgos; the Dalmatian, or Coach Dog, and the Pointer (*C. auricularius*). Races with longer fur are the Setter (*C. index*); the Spaniel (*C. extrarius*); the Springer; King Charles's Spaniel; the Cocker; the Blenheim; the Maltese (*C. Melitensis*); the Water Dog, or Poodle (*C. aquaticus*); the Little Basset; the Griffon, and the Lion Dog.

SECTION V. THE CUR DOGS (*Canes domestici*).—Head round; muzzle pointed; eyes large, prominent; ears erect; stature below the middle

size; sagacious, watchful, noisy; generally debased; appear to descend from three distinct species. Inhabited originally, 1st, the temperate western regions of the old continent; 2d, warm and tropical regions of the old continent; 3d, the temperate and cold latitudes of South America. They are as follows: The Terrier (*Canis terrarius*); the Pariah of India; the Poe Dog of the Pacific Islands; the New Zealand Dog; the Patagonian Dog, and the Tierra del Fuego Dog.

SECTION VI. THE MASTIFFS (*Canes urcani*).—Muzzle truncated; cranium elevated; frontal sinus large; condyles of the lower jaw above the line of the upper molars; mouth rounder in front; head large; ears small, partially drooping; neck and loins strong; legs strong; tail carried erect; structure powerful. Inhabited originally high mountain ranges, and the more temperate regions of the northern hemisphere on the old continent. The best known of them are the Mastiff of Thibet (*Canis urcanus*); the English Mastiff; the Cuba Mastiff; the Bull Dog (*C. Anglicus*); the Bull Terrier; the Pug Dog; the Roquet (*C. fricator*); the Little Danish Dog; the Artois Mongrel, and the Alicant Dog.

From the foregoing synopsis we derive a pretty correct notion of the geographical distribution of the various races of dogs, and also of the distinctive characters, immutable and non-transferable, which mark their separate and different origin. Much has been written by authors in regard to the *means* by which the various species have been distributed over the earth; but we have met with no theory which will bear criticism. We prefer to believe, as the more philosophical conclusion,—so far at least as dogs are concerned,—that the different races of canines were created in the regions where they were originally found, and were adapted in the beginning by the All-wise Creator to the conditions of existence peculiar to the several quarters of the globe.

We notice also another fact, that the several races of dogs differ in intellectual capacity and the moral instincts, in the same degree as the various races of men, with whom they originated, differ in their capabilities for civilization and improvement. The American Indian, for example, having no aptitude for civilization, withers and dies in the atmosphere of a civilized state; and the indigenous dogs of America appear to be naturally inferior in intelligence to the races of European origin. The dog of the late celebrated Indian chief, Teeumseh, of a pure, unmixed native breed, appears, in a degree, to confirm this opinion. He was about the size of a Spaniel. In disposition he was neither sullen nor snappish; he scarcely ever barked or howled; but was grave and silent like a true Indian, while his aspect was extremely savage, and the colors of his fur were those of the common wolf.

Of all quadrupeds, dogs possess the greatest power of modulating the voice. The various emotions which agitate them they express by a bark, howl, bay, whine, snarl, yelp, or growl. In pain, suffering, or grief, they have an expressive whine or moan; when impatient, a guttural, tremulous squeal; and when angry, a sharp snarl. The Shepherd's Dog is able to make known his will to the sheep committed to his charge by the varied intonations of his voice. Every tone appears to be well understood by them; they acknowledge his authority and obey his commands.

The intellectual powers of the dog are not created by training and long ages of education, as some assert, however much they may have been improved and developed by these circumstances. These mental attributes are rooted in his original constitution, and are utterly unattainable by those races of the Canidae that remain wild. The dog is civilized and domesticated, because he is fitted and designed by nature for such a state; while the wolves and other dog-like animals continue in a savage condition, because they have no inherent qualities which render any other possible.

We can fix on no period when the education and domestication of the dog commenced, but we have incontestable proofs that his civilization is as old as that of the human race. These proofs are furnished by the oldest mythologies, in all which he occupies a prominent place. "One of the most beautiful stars among the oldest designated in the heavens, and which served for the purpose of fixing an epoch in the solar year, was called by his name — Sirius. Other constellations, nearly as old, were likewise noted by the name of dogs; and in typifying ideas by images representing physical objects, moral qualities of the highest order were figured with characteristics of the dog, till his name and image became conspicuous in nearly every ancient system of Pagan theology."

THE DOG HISTORICALLY CONSIDERED.

The wide and rapidly increasing interest manifested in regard to the Canine species has led us to compile the following historical summary, which presents, in brief, a sketch of these interesting animals from the earliest ages, and marks the changes to which they have been subjected, and the epochs of the introduction of some new species:—

Many nations in Central Asia, and tribes that emigrated from thence, employed the large, feroeious dogs they had with them for the purpose of war. Sometimes they formed their advanced or first line with light troops and these animals; at others, each warrior had his own dog to assist him; and, lastly, they placed the dogs to guard their women and wagon-camps. We find this usage among the Hircanians, Caspians, Co-

lophoni, Castabantes, the Gauls, the tribes on the Meander, and the Giramantes of the African Zaara. The oldest Germanic tribes likewise used dogs; and the Cymbers, when they were defeated by Marius, left the glory of a long and obstinate resistance to the Roman legions in the hands of their women and the valor of their dogs, who formed the defensive force of the wagon-rampart that enclosed their camp. The practice of using watch dogs to guard fortresses and castles continued until the introduction of regular armies. The town of St. Malo, in France, for several centuries was guarded by a few watchmen, and many dogs kept at the public expense, who were unchained as soon as the gates were locked. The Rhodian knights trained theirs with particular care for this service. In the history of the invasion of Peru by the Spaniards, the names of two dogs are recorded which received regular soldiers' rations.

But it was for the purpose of watching the flocks and hunting that dogs were most universally trained from the earliest ages, and that pains began to be taken to improve their required qualities by crossing the breeds of different countries. The *Cynegetica* of the Younger Xenophon, Gratus Faliscus, Aurelius Nemesianus, Oppian, and Elian, contain many particulars on the question connected with this subject. We learn from them, that although the Greeks had many races of dogs, the distinct varieties in their possession were not numerous, and that while their instinctive qualities were as perfect as now, they had not yet acquired that complete docility which incessant training and education have since produced.

In a series of sixteen or seventeen breeds of hunting dogs then existing in Western Asia, Greece, Italy, and to the north of Macedonia, there appears to have been only two races; one of Greyhounds, the other of a kind of dogs hunting by the scent. Most of these were named after the nations where they were bred; but others, particularly in Greece, were subdivided under appellations of their supposed original owners, or from qualities for which they were celebrated. Thus the Iberian, Gallican, and Carian were Asiatic; the Thracian, Sauromatan, Thessalian, and Paeonian were extra Grecian; the Ausonian, Arcadian, Laconian, Locran, and Cretan were Greek. Among the last mentioned were the breeds called Castorian, Menelaides, and Hermodian, named after the heroes who were supposed to have reared them.

The Cypeeli, or dogs without feet, bred in Achaia, were most likely very fleet Greyhounds. The Spartan, or Laconian, asserted to be a cross breed derived from foxes, or more likely from the Chrysean group, hunted by the scent. The Chaonian, no doubt, had also a mixed origin, or were a domesticated race of Chaontes, or Chrysean wild dogs, allied to the Molossian, which race was a broad-mouthed breed, and therefore connected with the

Drover or Watch Dog, but not with the Bull Dog or Mastiff; for that kind was unknown until the march of Alexander made Greece acquainted with it. The Chaonian is most likely still to be seen in the great Watch Dogs of Epirus, and even in the race of Asia Minor; and, as it is mentioned also among the Cretan, where the Molossian were fabled to have been cast in brass by Vulcan, and animated by Jupiter, we may conclude that it was imported during the swarming of the Cyclopians, and other nations, after they were expelled from Albanian Iberia and High Asia, and were wandering, for some centuries, along the seas in quest of plunder and new homes. Of this race were also, no doubt, the Cretan Diaphonoi, who fought by day and hunted by night. But the Parippi seem to have been small, and carried on horses, as was afterwards done in the romantic era of Western Europe, by knights and damsels with their brachets.

Cælius and others advert, however, to a race of blue or slate-colored Molossi, not highly esteemed by the sportsmen of antiquity; which, nevertheless, we are inclined to consider as the sources of the French Matin, so unphilosophically represented by Buffon as one of the great progenitor breeds of dogs; though it is only an inferior descendant of what is now called the Great Danish Dog, or more properly the Great House Dog of the northern German nations. This race was anciently of an iron-blue color, and approached, in the form of the mouth, the present Suliot dogs. The Molossi, unlike Bull Dogs, who seldom if ever give tongue, were prone to barking.

Virgil styles the race Aeer Molossus. Nemesianus speaks of rural Molossi. The present breed of the Morea still retains its ancient characters, and is not of Mastiff form. It was when the Greeks became acquainted with the true Mastiff that they, according to their constant practice, referred to some race of their own, a different kind of dogs, but which, the gods having created everything in Greece, necessarily proceeded from thence; and the Romans, servile copiers of Greek ideas, applied the same name of Molossian to the British Bull Dog when they became acquainted with it.

The Arcadian dogs (*Leonicii leontomiges*), said to be sprung from lions, show an approach to Mastiffs, with the exception of the drooping ears; for Megasthenes, being, we believe, the most ancient writer who notices that peculiarity, would scarcely have mentioned it as such in Persia if it had been known among any breed of dogs in Greece.

The Alopecides of Sparta seem not to have been valued, as, according to Xenophon, who compares them with the Castorides, they were under-sized, and consequently wanting in audacity and perseverance; their principal use was in securing small game. Yet, according to Nicander, the Castorides were dun-colored dogs, of a similar vulpine origin as the

Alopecides of Laconia and Amorgia. Amyelea, where they were bred, was a town of Laconia and the birthplace of Castor and Pollux. Festus calls them "sagaees canes ex vulpe et cane." But as crossing breeds was constantly practised, the Spartan, on other occasions, are highly praised; and they, no doubt, were fit to grapple with the larger animals of the chase. These, probably, were the Castorides of Xenophon.

Among the breeds of dogs known to the classical writers of antiquity, by report more than by personal information, was that styled Elymaean. It seems to have belonged to the Elymaei, a tribe of the deserts bordering on Bactria and Hircania, but to have extended as far as Egypt; for it is depicted on the monuments of Thebes. Cirino, and the commentator on Fracastor's *Alcon*, show the probability that from this name arose the modern appellation of *Lyemer*, in French *Limier*, applied to the Blood-hound, because it was formerly used to track game, such as wild boar, &c., through the forest, until the huntsman, who held it by a lengthened lyemme, or leash, came upon the lair of the animal. It is, however, likely that the Limmer is meant, for the two races are confounded; and the last mentioned was the most common.

Of the Indici, or Indian dogs, by Aristotle reported to be a hybrid race between the dog and tiger, we may conjecture, as this intermixture is physiologically inadmissible, that the Greek philosopher trusted reports conveyed to him from the East, and originating either in the love of the marvellous, which Oriental nations constantly betray, or in the misapprehension of terms used in the description of the spotted or brindled parent animal, by the Greeks understood to be a tiger or a panther; when the words of the natives, which conveyed this idea, may have confounded the Hunting-leopard with a brindled canine of the woods, such as the *Lyciscus tigris*, or a species of Lycaon (*Canis pictus*), of Central Asia, now lost by absorption in the Mastiff race, or in a broad-mouthed, spotted or brindled dog, nearly allied to it, then called the Libyan Matagonian, and formerly also about the temples of Ceylon; for this was likewise pretended to be a crossed race with a wild beast. Several other races of dogs are mentioned by the Greek classical writers of antiquity; but we know little more of them than their names, and with what breeds it was recommended to cross them. But the Cattle and Shepherd Dogs, equally valuable in hunting and in watching flocks, are described as far the largest and most useful. In this race was intermixed the blood of the *Chaon*. They were of the same kind as the Epirotic Molossi, and most likely the progenitors of the subsequent western Boar-hounds. The Romans, during their extended empire, added several races of dogs to the Greek catalogue. They notice the Celtic breed, which was regarded as descended from wolves.

The Spanish Iberian is equivocally praised by Nemesianus.

It is thence, however, we have obtained dogs of a very fine scent; and Oppian likewise mentions the Iberes; but the question remains, whether Asiatic Iberia is not meant by both? It was from that vicinity that they obtained their Phasiania, supposed to be used in fowling. The *Petronian*—so called on account of their hard feet—were a breed introduced from the Sicambri, beyond the Rhine, and also believed to have been adapted to the same purpose; but the *Althamanian*, from the vicinity of Pindus, in Macedonia, are only praised for a circumventing sagacity, as mentioned by Gratius Faliscus.

In Italy proper, the Etrusean and Umbrian breeds alone seem to have been valued; the first, according to Nemesianus, was a shaggy Harrier, and may have been introduced from Spain by the Iberian colony which forced its way into Liguria; the second, a dog nearly allied to our Bloodhound, since it was held by a limmē, or thong, and, guided by the nose, led the hunter on to the game.

In Persia, the ruling dynasties were in general descended from conquering tribes from Central Asia, and the princes possessed vast hunting packs, as is attested by Xenophon. We find Megasthenes first noticing true Mastiffs with drooping ears; these were most likely known among the Greeks by the name of Candalides and Seri. The East had also, as we have seen, powerful Cattle Dogs and true Greyhounds. A race of this kind is likewise represented in the hunting scenes depicted in the catacombs of the Egyptian Pharaohs, attesting the remote antiquity of the breed; and we find them again in the Persian sculptures at Takhti Boustan, which belong to the Parthian era. But with regard to Lapdogs, none are noticed in Asia, nor does it appear they attracted much attention among the Greeks, though, at a later period, the Roman ladies were very partial to the *Melitean*, or Maltese breed.

Thus we find the early Greeks acquainted, at first, with only two races of foreign origin, clearly made out—the Greyhound, and a Shepherd or rather Drover's Dog, which answered also for hunting and watching property. They had, besides, one or two of indigenous derivation, which were intermixed with those hunting by scent, and believed to be of vulpine extraction. At a later period, the true Mastiff's became known, and the Lapdog of Malta was imported. In proof that neither they nor the Romans had any notion of such packs of hounds as are at present known, we have only to refer to Ovid's description of the death of Actæon, to be satisfied that his hounds (no doubt the picture of a complete set in the age of Augustus) were, nevertheless, a mixture of dogs, with very different qualities and characters in scent, sight, velocity, voice, size, colors, and

nature of hair, &c. Indeed, the mixture of matches of hounds, Greyhounds, Bulldogs, and Watch-dogs, was still usual on the continent, until the beginning of the last century, whenever a great hunting expedition was undertaken; and in Turkey the grandees, even at the present time, collect the Watch-dogs, &c., of the Shepherd tribes of all nations within their reach, and unite them with their own Greyhounds when an important day's sport is expected.

The ancients were admirers of breeds of dogs of certain colors. White or blue (slate color) Hunting-dogs were not esteemed; they preferred such as had the fur of a wolf, or were buff' (grain color), foxy, brindled like the tiger, or spotted like the panther. Xenophon approves of those with colors separately marked; and Pollux objects to much white, black, or red. Those which were tan-colored, and had a black muzzle, were named *Pholyles*, and highly esteemed. The dogs hunting by scent are, however, always represented as having a vulpine character; and therefore they cannot have belonged to the race of our modern hounds. Niphus is the first who, we think, applies improperly to them the name of *Brachas*, a British Celtic appellation, which, according to Mr. Whitaker, at first designated a wild hound. In the view of that writer, there were originally in Britain five races of dogs: the great Household Dog, the Greyhound, the Bulldog, the Terrier, and the large Slowhound. But in his description he evidently confounds races; for the Great Household Dog is, with him, a Mastiff, having no sagacity of nose, and distinct from the Bulldog, to which he attributes powers of scent. The Greyhound is regarded by him as the *Virtagus*, or British *Vertrach*; while Caius and Pennant are more inclined to consider it a kind of Lurchur. His fourth race is the Terrier of Britain, considered as distinct from the Crooked-legged Turnspit of the continent, noticed even by Greek writers. This may be an indigenous species, because Oppian, under the name of *Agassens*, clearly describes the Scottish, or Rough-haired breed. And his denomination seems to be derived from the Celtic *Aghast*, or *Agass*, a word used to designate simply a dog; therefore, emphatically, the dog of the country. Caius, however, employed the name *Agasseus* for the Gaze-hound, which may be the present Greyhound, hunting entirely by the eye. The fifth is the Southern, also Lancashire, or Manchester Hound; but that species is of the same original stock with the Beagle, which Pennant is inclined to consider as the *Agasseus*, and we may believe, if it was known in Britain at a remote period, bore the Celtic name of *Brach*, probably derived from *brac*, a spot; in the Teutonic dialects, *brach*, *hiatus*, *interruptio*, *macula*.

It is, however, obvious that all breeds of hounds, with round and long drooping ears, are originally descended from one race, and derived from the

East. In the researches made with a view to trace their origin, a great number of antique sculptures, statuary, bass-reliefs, and intaglios were consulted, as well as the illuminated manuscripts in public and private libraries, of a considerable part of Europe; several collections of ancient seals, numerous drawings of monumental effigies, and of stained glass, and the result proved, that, with the exception of one Egyptian instance, no sculpture of the earlier Grecian era produced representations of hounds with completely drooping ears; those with them half pendulous are missing in the most ancient; and this character increases by degrees in the works of the Roman period. There is in the Vatican collection only one statue of a genuine Mastiff; and representations of a kind of Hound, with a small ear, partially turned downwards, occur in a statue of Meleager, and in other instances; but, we think, in none so early as the Periclean age. Of those of Imperial Rome, one also represents the Tuscan Dog; the others are British, Spanish, or a Gallie Hound, not noticed by Pliny. Strabo first describes, we think, the British Bulldog; remarking the pendulous ears, frowning aspect, and relaxed lips. And *Elian*, *Diodorus*, and *Columella* mention dogs with procumbent and dejected ears. Notices of these characters, in writers of so late a period, indicate an absence of the same characters in the indigenous races of classic ground, and their novelty, at the time these authors were writing. The sculptures of Takhti Boustan, in Persia, attest, as far as they go, similarly a want of the drooping ears in dogs; and the Indian carvings, paintings, and manuscripts are equally destitute of Hounds and Mastiffs, excepting in the decorations of the Buddha temples of Ceylon, where an incarnation of the god Mattalee, in the form of a fierce dog, occurs; and another, where Jutaka is attacked by a hunter with his dog. In both representations the animals resemble a Lyeon (*Canis pictus*, or a *Hyena erœuta*), in the distribution of colors and spots only; the Hunter's Dog is smaller, with the ears pointed; and the incarnate god is larger, and has them rounded, though erect. In the middle ages, the northern invaders of the Roman empire brought with them their own fierce races of rugged and huge Coursing and Cattle-dogs, whose descendants may still be traced in Russia, Scotland, Ireland, Spain, and even America. From the time of the Goths, Hounds, before not common, seem to disappear altogether for some ages. The bronze animal of the time of Charlemagne, at Aix-la-Chapelle, is not clearly a dog. The oldest, therefore, we have found, is the embellishment of a seal, where two dogs, with dropped ears, we take to be Brachet Hounds, are figured beneath a horseman blowing a horn. It is the image of Errard of Orange, about the year 1174, the family arms of that house being originally a hunting-horn. The next is on the seal of Alberic de Vere, 1214; and the third, a stained glass

of Ferdinand, king of Castile, 1330; after which they become gradually more common.

Hence we may, perhaps, conclude, Greyhounds with erect ears, being painted in the catacombs of the kings of Thebes, in Egypt, above three thousand years ago, and sculptured in Greece, with them half deflected, not earlier than the era of Pericles, that these animals, the oldest race trained for hunting, were marked with the sign of domesticity about his period, or near one thousand years after the date of the first known pictures, or that the Egyptian were distinct from those of Europe.

Again, we may infer, either that Hounds and Broad-mouthed dogs with pendulous ears, not being known till the era of Alexander, and continuing scarce to a comparatively late period, belong to a distinct origin, and were reduced to domesticity at a subsequent time, or were reclaimed in a region very remote from the then existing seat of civilization. Finally, that with them also the pendulous mark of domestication was a gradual result effected somewhat later.

Yet the single exception we have noticed is sufficient to establish the fact, that dogs with pendulous ears existed at a very remote period, for the figure is found in the scenes relating to the chase published by Cailland, and taken, we believe, from the catacombs of the kings of Thebes. In this instance, it is not a Greyhound, but a Lyemer, or dog led by a leash, slender-bodied, high on the legs, with a truncated tail carried high, and even marked on the flank like a modern hound of the rusty gray breed of the East.¹ The hunter, holding a bow in its case, leads the dog by a slip rope, as was done formerly in Europe with the brachet. This figure we are inclined to regard as representing the Elymean Dog, perhaps first introduced into Egypt by the shepherd conquerors, or brought home by Sesostris after his Asiatic expedition to the Oxus.

Although there is little doubt that the Braque of the French, and its diminutive Brachet of the Scots, is also the Brac, or Breac, of the British Celts, it may be questioned whether that race was the same we now call the Hound and Beagle. Mr. Pennant thinks the Beagle is described by Oppian under the name of Agasseus; but we take "Crooked, slender, rugged, and full-eyed" to be, as well as what follows concerning the powers of scent, more applicable, on the whole, to a native Terrier,—the word being Celtic, and designating a spotted species, as it would appear, of three colors. There is a singular coincidence in the oldest Cingalese tales, of the Ceylonese Buddhists, who narrate a mythus respecting their first arrival, wherein a dog of three colors performs a conspicuous part; and, in the romance of Sir Tristrem and the Bele Ysonde, where another three-colored dog, evidently typifying some druidical sect, is equally prominent.

For although these, and other romantic episodes of the Round Table, appear at present in a form which they acquired in the eleventh and twelfth centuries, they are all extracted from mythological British poems of the Pagan period, and represent more recondite doctrines than their present Armorican tenor portrays. Such is also the fact in the tale relating to the Brachet with the leash, whereon was inscribed the whole mystery of the chase, which, having strayed, and passed into other hands, caused a feud among King Arthur's knights. These poems establish the antiquity of spotted Hunting-dogs, or Hounds, at a remote period in the East, and, in the West, reproduce them already before its historical era; but disproves their British origin, and leaves the question of the pendulous ears undetermined. Hounds, shaped like the present, cannot be traced in the old Frankish and Anglo-Saxon manuscripts, they are all Coursing Greyhounds; and this character is continued, with few exceptions, in the emblem of fidelity or gentility, usually couched on monuments at the feet of the effigies of knights, to the last period of recumbent figures.

We may therefore conclude, that the term Braccus, Braque, or Brachet, originally designated a sporting dog in general; for sometimes a lady carries one upon her palfrey, at others it follows a knight or page, and is engaged even in quelling a boar. The old St. Hubert Hound may well have answered these purposes.

But the type of a true Hound being the Sleuch, Slot, or Bloodhound, although it may have been found in Umbria, and there is little doubt that it existed in Gaul before the introduction of Christianity, we owe to the East the great and improved breeds which constitute the present race. The Bloodhound, so remarkable for his tracking sagacity, was used in the ferocious wars between the English Edwards and the Scottish Bruces; by Henry VIII. in France, and still more inhumanly by the Spaniards in Peru; and by Elizabeth, in the Irish wars, where the Earl of Essex had no less than eight hundred of them in his army. Even so late as the Maroon rebellion in Jamaica, and Bonaparte's attempt to recover St. Domingo, Bloodhounds were trained to hunt human beings like wild beasts. A black race of hounds was already established in the Ardennes in the sixth century, having been brought thither, according to legends, by St. Hubert, from the south of Gaul; we may surmise that it was derived from the East, for Christian pilgrims of rank, on their return from Palestine, before the Crusades, brought from Constantinople a white race, which they offered at the shrine of St. Roch, because he was the patron under whose invocation persons suffering in fear of hydrophobia were supposed to receive protection; but the breed was no less called after St. Hubert, the patron of hunting. The black and the white were, most likely, soon regarded as types of

the Pagan and the Christian conditions of existence; and although the last mentioned were larger and more prized, it seems that the breed never became numerous, and both continued to be denominated Dogs of St. Hubert to the time of the late revolution. Of the Talbots of England we know not the origin; but it is likely that some individual pilgrim of the illustrious family bearing that name brought the breed from Palestine.

About the middle of the thirteenth century St. Louis brought back from the same region a third breed of hounds, whose prevailing color was a rufous gray (*gris de lièvre*); they were high on the legs, with handsome feet and large ears; they were bold, and even vehement; superior in speed to the St. Hubert races, but with inferior sensibility of nose.

A fourth race was formed by Louis XII.; it was denominated Clerk's Hounds (*chiens greffiers*), because they were derived from a cross between the white St. Hubert's with a Bracco bitch brought from Italy, the property of one of the clerks of the king's household. The houses and lodges in the park of St. Germains were built to foster this breed, which united all the good qualities of the other running dogs, without their defects. They were usually white, with a tan spot on the body, and appear to be the progenitors of our present hounds.

On referring to the splendidly illuminated manuscript, Hunting Codes of Philip the Good, Duke of Burgundy (1425–1440), of Charles the Bold, his son, a book bearing the title of *Le Roi Modus*; a third, of the Emperor Maximilian of Austria; and a fourth, once the property of Charles V., all in the library of the Dukes of Burgundy, at Brussels, we find boar hunts, where well executed dogs represent Staghounds with ample ears, but with nearly the whole fur a rusty-red color, and only a few are white, with two or three large spots of an ashy gray; they greatly resemble a breed of St. Bernard Alpine dogs, still preserved. The Bloodhounds, or Limers, are quite white.

Foxhounds, or hounds trained to fox-hunting, were first formed by the order of Louis XIII., who, being fond of that sport, and impatient of the mode then in use, which consisted in sending Turnspits into the earths, desired, according to M. Robert de Salnove, lieutenant of the chase, to have dogs trained to run after unkennelled foxes.

With regard to the red-haired just mentioned, the race was still kept up to hunt wolves so late as the year 1779.

In the book of the Emperor Maximilian, a stag-hunt exhibits dogs of the same rust color; others are white, with the back, head, and ears black, or black with some rufous. The Limers rusty-brown and yellowish-gray. The Coursing dogs are pure white; but in all the hunting scenes of the above manuscripts other dogs are intermixed with the packs; and the

black St. Hubert's can be distinguished, though no longer prominent, as they were less esteemed. The mixture shows, that the system of couples, or matches of different colored and bred dogs, was still in force.

In 1556 a print was published at Cadiz, of a dog then recently brought from India. The form of the animal shows an intermediate between a Greyhound and a Hound, having a light but strong frame, a deep chest, and the head shorter than the first named, but with small, half dejected ears. It came, most likely, from a breed belonging to the Mohammedan princes of the west coast, and may be the origin of Buffon's name of "*Braque de Bengale*," although we would be inclined to regard it as the parent of the cross which produced the Dalmatian, or our present Coach Dog, being white in color, and entirely covered with small, black spots.

From this succinct history we learn that dogs have been the companions of man from the beginning; that the moral, intellectual, and domestic qualities they manifest are innate, not acquired, and that they have increased in docility, and been improved by education in the same proportion as man himself; in other words, that the progressive development of the dog keeps pace with that of human civilization.

ANECDOTES ILLUSTRATIVE OF THE INTELLIGENCE AND DOMESTIC HABITS OF THE CANINE.

In considering the numerous anecdotes which have been collected in regard to the dog, and furnishing so many proofs of his sagacity and foresight, we may well ask, Who can decide where instinct ends, and reason begins, in the actuating motive of this noble animal? His attachment to his master is proverbial; his fleetness, docility, and endurance have passed into a proverb, and his usefulness has long been an established fact. In nearly every country the sagacity and fidelity of the dog have made him the friend and companion of man, and the cheerful partaker of his fortunes. In the pursuit of the chase, and in the avocations of more domestic life, he has ever been the attendant of the human species, and scarcely any other animal has been made more useful, or been employed to better advantage. Anecdotes of his courage and instinctive reasonings abound to an unlimited extent, and volumes might be added to those heretofore given on these points.

THE DOG OF RUE ST. DENIS, PARIS.—M. Dumont, a tradesman of the Rue St. Denis, Paris, offered to lay a wager with a friend, that, if he were to hide a six-livre piece in the dust, his dog would discover and bring it to him. The wager was accepted, and the piece of money secreted, after being carefully marked.

When they had proceeded some distance from the spot, M. Dumont signified to his dog that he had lost something, and ordered him to seek it. Caniche immediately turned back, while his master and his companion pursued their walk to the Rue St. Denis. Meanwhile a traveller, who happened to be just then returning in a small chaise from Vincennes, perceived the piece of money, which his horse had kicked from its hiding-place; he alighted, took it up, and drove to his inn in Rue Pont-aux-Choux, and Caniche had just reached the spot in search of the lost piece when the stranger picked it up. He followed the chaise, went into the inn, and stuck close to the traveller. Having scented out the coin, which he had been ordered to bring back, in the pocket of the latter, he leaped up incessantly at and about him. The gentleman, supposing him to be some dog that had been lost or left behind by his master, regarded his different movements as marks of fondness; and as the animal was handsome, he determined to keep him. He gave him a good supper, and, on retiring to bed, took him with him to his chamber. No sooner had he pulled off his breeches, than they were seized by the dog; the owner, conceiving he wanted to play with them, took them away again. The animal began to bark at the door, which the traveller opened, under the idea that he wanted to go out. Caniche instantly snatched up the breeches, and away he flew. The stranger posted after him with his night-cap on, and nearly *sans culottes*.

Anxiety for the fate of a purse full of double Napoléons, of forty francs each, which was in one of the pockets, gave redoubled velocity to his steps. Caniche ran full speed to his master's house, where the stranger arrived a moment afterwards, breathless and furious. He accused the dog of robbing him. "Sir," said the master, "my dog is a very faithful creature, and if he has run away with your breeches, it is because you have in them money which does not belong to you." The traveller became still more exasperated. "Compose yourself, sir," rejoined the other, smiling; "without doubt there is in your purse a six-livre piece, with such and such marks, which you picked up in the Boulevard St. Antoine, and which I threw down there, with a firm conviction that my dog would bring it back again. This is the cause of the robbery which he has committed on you." The stranger's rage now yielded to astonishment; he delivered the six-livre piece to the owner, and could not forbear caressing the dog which had given him so much uneasiness and such an unpleasant chase.

MURDERERS DETECTED BY DOGS.—"Since my arrival in Paris," says a gentleman writing to a friend, "a man has been broken on the wheel, with no other proof to condemn him than that of a Water-spaniel. The circumstances attending it being so very singular and striking, I beg leave

to communicate them to you. A farmer, who had been to receive a sum of money, was waylaid, robbed, and murdered by two villains. The farmer's dog returned with all speed to the house of the person who had paid the money, and expressed such amazing anxiety that he would follow him, pulling him several times by the sleeve and skirt of the coat, that at length the gentleman yielded to his importunity. The dog led him to the field, a little from the roadside, where the body lay. From thence the gentleman went to a public house, in order to alarm the country. The moment he entered (as the two villains were there drinking), the dog seized the murderer by the throat, and the other made his escape. This man lay in prison three months, during which time they visited him once a week with the Spaniel; and though they made him change his clothes with other prisoners, and always stand in the midst of a crowd, yet did the animal always find him out and fly at him.

"On the day of trial, when the prisoner was at the bar, the dog was let loose in the court-house, and, in the midst of some hundreds he found him out, though dressed entirely in new clothes, and would have torn him to pieces had he been allowed; in consequence of which he was condemned, and at the place of execution he confessed the fact. Surely so useful, so disinterestedly faithful an animal should not be so barbarously treated as I have often seen them, particularly in London." The above took place in 1764.

The following transpired in France in the reign of Louis VII.

"Aubri de Mondidier, a gentleman of family and fortune, travelling alone through the Forest of Bondy, was murdered, and buried under a tree. His dog, a Bloodhound, would not quit his master's grave for several days; till at length, compelled by hunger, he proceeded to the house of an intimate friend of the unfortunate Aubri, at Paris, and, by his melancholy howling, seemed desirous of expressing the loss sustained. He repeated his cries, ran to the door, looked back to see if any one followed him; returned to his master's friend, pulled him by the sleeve, and with dumb eloquence entreated him to go with him. The singularity of all these actions of the dog, added to the circumstance of his coming there without his master, whose faithful companion he had always been, prompted the company to follow the animal, who conducted them to a tree, where he renewed his howl, scratching the earth with his feet, and significantly entreating them to search the particular spot. Accordingly, on digging, the body of the unfortunate Aubri was found. Some time after, the dog accidentally met the assassin, who is styled, by all the historians that relate this fact, the Chevalier Macaire; when instantly seizing him by the throat, he was with great difficulty compelled to quit his victim. In short, whenever the

dog saw the chevalier, he continued to pursue and attack him with equal fury.

"Such obstinate violence in the animal, confined only to Macaire, appeared very extraordinary, especially as several instances of Macaire's envy and hatred to Aubri de Mondidier had been conspicuous. Additional circumstances created suspicion, and at length the affair reached the royal ear. The king, Louis VII., accordingly sent for the dog, which appeared extremely gentle till he perceived Macaire in the midst of several noblemen, when he ran fiercely towards him, growling at and attacking him as usual. The king, struck with such a combination of circumstantial evidence against Macaire, determined to refer the decision to the chance of battle; in other words, he gave orders for a combat between the chevalier and the dog. The lists were appointed in the Isle of Notre Dame, then an unenclosed, uninhabited place, and Macaire was allowed, for his weapon, a great cudgel. An empty cask was given to the dog as a place of retreat, to enable him to recover breath. Everything being prepared, the dog no sooner found himself at liberty than he ran round his adversary, avoiding his blows, and menacing him on every side, till his strength was exhausted; then, springing forward, he seized him by the throat, and threw him upon the ground. Macaire now confessed his guilt in presence of the king and the whole court. In consequence of this, the chevalier, after a few days, was convicted upon his own acknowledgment, and beheaded on a scaffold in the Isle of Notre Dame."

THE MAGNANIMOUS NEWFOUNDLAND DOG.—A young man belonging to the city of Paris, desirous of getting rid of his dog, took it along with him to the River Seine. He hired a boat, and rowing into the stream, threw the animal in. The poor creature attempted to climb up the side of the boat, but his master, whose intention was to drown him, constantly pushed him back with the oar. In doing this he fell himself into the water, and would certainly have been drowned had not the dog, as soon as he saw his master struggling in the stream, suffered the boat to float away, and held him above the water till assistance arrived, and his life was saved.

QUEEN MARY'S LAPDOG.—It is said in the life of Mary, Queen of Scots, lately published at Glasgow, that after her head was cut off, her little favorite Lapdog, which had affectionately followed her, and, unobserved, had nestled among her clothes, now continued to caress her, and would not leave the body till forced away, and then died two days afterwards.

ABOUT A SHEPHERD'S DOG.—Mr. Renton, of Lammerton, had a herdsman, who, pursuing a sheep that had run down the steep bank of Blackadder Water, fell into the river and was drowned. His dog, a com-

mon Shepherd's Dog, returned home next morning, and led his wife to the spot, holding her by the apron. The body was found. The dog followed it even to the grave, and died in a few days.

THE MASTIFF THAT DIED OF GRIEF.—A Mastiff-dog, belonging to the Hon. Peter Bold, England, attended his master in his chamber during the tedious sickness consequent on a pulmonary consumption. After the gentleman expired, and his corpse had been removed, the dog repeatedly entered the apartment, making a mournful, whining noise; he continued his researches for several days through all the rooms in the house, but in vain. He then retired to his kennel, which he could not be induced to leave. Refusing all manner of sustenance, he soon died. Of this fact, and his previous affection, the surgeon who attended his master was an eye-witness.

MR. HOGG'S DOG SIRRah.—"My dog Sirrah," says Mr. Hogg, "was, beyond all comparison, the best dog I ever saw. He was of a surly and unsocial temper. Disdaining all flattery, he refused to be caressed; but his attention to my commands and interests will never again, perhaps, be equalled by any of the canine race. When I first saw him, a drover was leading him in a rope. He was both lean and hungry, and far from being a beautiful animal, for he was almost all black, and had a grim face, striped with dark brown. The man had bought him of a boy, somewhere on the Border, for three shillings, and had fed him very ill on his journey. I thought I discovered a sort of sullen intelligence in his countenance, notwithstanding his dejected and forlorn appearance. I gave the drover a guinea for him, and I believe there never was a guinea so well laid out; at least, I am satisfied I never laid one out to so good a purpose. He was scarcely a year old, and knew so little of herding, that he had never turned a sheep in his life; but as soon as he discovered that it was his duty to do so, and that it obliged me, I can never forget with what anxiety and eagerness he learned his different evolutions. He would try every way deliberately, till he found out what I wanted him to do; and, when I once made him understand a direction, he never forgot or mistook it again. Well as I knew him, he often astonished me; for, when hard pressed in accomplishing the task that he was put to, he had expedients of the moment that bespoke a great share of the reasoning faculty."

Among other remarkable exploits of Sirrah, illustrative of his sagacity, Mr. Hogg relates that, upon one occasion, about seven hundred lambs, which were under his care at weaning time, broke up at midnight and scampered off, in three divisions, across the neighboring hills, in spite of all that he and an assistant could do to keep them together. The night was so dark that he could not see Sirrah; but the faithful animal heard his master lament their absence in words which, of all others, were sure to set

him most on the alert ; and, without more ado, he silently set off in quest of the recreant flock. Meanwhile the shepherd and his companion did not fail to do all in their power to recover their lost charge ; they spent the whole night in scouring the hills for miles round, but of neither the lambs nor Sirrah could they obtain the slightest trace. It was the most extraordinary circumstance that had ever occurred in the annals of pastoral life. They had nothing to do, as day had dawned, but to return to their master, and inform him that they had lost his whole flock of lambs, and knew not what was become of one of them.

" On our way home, however," continues Mr. Hogg, " we discovered a lot of lambs at the bottom of a deep ravine called the Flesh Clench, and the indefatigable Sirrah standing in front of them, looking round for some relief, but still true to his charge. The sun was then up ; and when we first came in view, we concluded that it was one of the divisions which Sirrah had been unable to manage until he came to that commanding situation. But what was our astonishment when we discovered that not one lamb of the whole flock was wanting ! How he had got all the divisions collected in the dark is beyond my comprehension. The charge was left entirely to himself from midnight until the rising sun ; and if all the shepherds in the forest had been there to have assisted him, they could not have effected it with greater propriety. All that I can further say is, that I never felt so grateful to any creature under the sun as I did to my honest Sirrah that morning."

THE DOG AND THE BAKER.—" The wisest dog," says Sir Walter Scott, " I ever had, was what is called the Bulldog Terrier. I taught him to understand a great many words, insomuch that I am positive that the communication betwixt the canine species and ourselves might be greatly enlarged. Camp once bit the baker, who was bringing bread to the family. I beat him, and explained the enormity of his offence ; after which, to the last moment of his life, he never heard the least allusion to the story, in whatever voice or tone it was mentioned, without getting up and retiring into the darkest corner of the room, with great appearance of distress. Then, if you said, ' The baker was well paid,' or, ' The baker was not hurt, after all,' Camp came forth from his hiding-place, capered, barked, and rejoiced. When he was unable, towards the end of his life, to attend me when on horseback, he used to watch for my return, and the servant used to tell him ' his master was coming down the hill, or through the moor,' and although he did not use any gesture to explain his meaning, Camp was never known to mistake him, but either went out at the front to go up the hill, or at the back to get down to the moorside. He certainly had a singular knowledge of spoken language."

CANINE ATTACHMENT.—A horse in New York got its leg broken, and the owner was compelled to have the animal shot. When a person attempted to remove the animal, a dog which had slept in the stable with the horse three years refused to be separated from the carcass, but clung to the mane with its teeth, and mounted the vehicle when it moved off, and sat beside the dead horse, acting as chief and only mourner. After a lapse of three hours the dog returned to the stable, seeming quite lonely in the absence of its lost companion.

Mr. Kidd, in his essays on instinct and reason, furnishes the following interesting incident: "Of the dog we can all be eloquent; history has adduced some remarkable exhibitions of their sagacity, and I could relate 'true anecdotes' of some of my canine favorites that would hardly be credited. Still, with all my success in teaching dogs to do marvellous things, I never could teach them that when they jumped up with dirty feet, there was an injury done to my clothes. When they obeyed the command of 'Down, sir!' sometimes enforced by a gentle *coup de main*, they never could reason about the 'why and because.' Nor have I ever yet met with any dog, or ever heard of any dog, that *could* be argued with on these moral proprieties and observances. Talking of the memory of dogs, one of mine, Dash by name, was once stolen from me. After being absent thirteen months, he one day entered my office in town, with a long string tied round his neck. He had broken away from the fellow who held him prisoner. I discovered the thief, had him apprehended, and took him before a magistrate. He swore the dog was his, and called witnesses to bear him out. 'Mr. Kidd,' said Mr. Twyford, — I see him now, — addressing me, 'can you give us any satisfactory proof of this dog being your property?' Placing my mouth to the dog's ear, — first giving him a knowing look, — and whispering a little masonic communication, known to us two only, Dash immediately reared up on his hind legs, and went through a series of gymnastic manœuvres with a stick, guided meanwhile by my eye, which set the whole court in a roar. My evidence needed no further corroboration; the thief stood committed. Dash was liberated, and amidst the cheers of the multitude we bounded merrily homewards. The reunion among my household gods may be imagined. It would be farcical to relate it; nor must I dwell upon certain other rare excellences of this same dog, with whom, and his equally sagacious better half, Fanny, I passed many years of happy and delightful intimacy."

THE MUSIC-LOVING DOG.—As dogs generally have no taste for harmony, and musical sounds usually offend them, the following instance, where the love of music in a dog amounted to a passion, must be deemed most extraordinary: —

In the beginning of the Revolution, there was a dog which became known to musicians by the name of Parade, because he regularly attended the military at the Tuilleries, stood by, and marched with the band. His love of the art was so great, that each night he went to the opera, or some other place where he could experience the enjoyment which he so earnestly craved. The entertainment over, he would dine with any musician who expressed, by word or gesture, that his company would be agreeable. He was also remarkable for his independent spirit, and constantly declined all overtures to become the property of any individual.

A parallel to the above may be found in the ensuing incident, which we may entitle the story of

THE FIRE-DOG.—We all know what firemen are, and their arduous duties; but scarcely has one ever heard of a dog who felt it his duty to attend fires regularly, as if actuated by a benevolent desire to assist so far as he was capable. Here, however, is an authentic case. A gentleman residing, some few years ago, a few miles from London, in Surrey, was roused in the middle of the night by the intelligence that the premises adjoining his house of business were on fire. The removal of his furniture and papers immediately called his attention; yet, notwithstanding this, and the bustle that is ever incident to a fire, his eye every now and then rested on a dog, who, during the progress of the conflagration kept running about, and apparently taking a deep interest in what was going on, contriving to keep out of everybody's way, and yet always present amidst the thickest of the stir.

When the fire was subdued, and the gentleman had leisure to look about him, he again observed the dog, who, with the firemen, appeared to be resting from the fatigues of duty, and was led to make inquiries respecting him. Stooping down, and patting the animal, he addressed a fireman near him, and asked him if the dog was his.

"No, sir," replied the man, "he does not belong to me, nor to any one in particular. We call him the firemen's dog."

"The firemen's dog? Why so? Has he no master?"

"No, sir; he calls none of us master, though we are all of us willing to give him a night's lodging, and a pennyworth of meat; but he won't stay long with any of us. His delight is to be at all the great fires in London, and, far or near, we generally find him on the road as we are going along; and sometimes, if it is out of town, we give him a lift. I don't think there has been a fire for these two or three years past at which he has not been."

Three years after this conversation, the same gentleman was again called up in the night to a fire in the village where he resided, and to his surprise, he again saw this extraordinary dog, still alive and well, observing with the

same apparent interest the progress of the fire, and the efforts made to overcome it. Still he called no man master, disdained to receive bed and board from the same hand more than a night or two at a time, nor could the firemen trace out his ordinary resting-place.

A DOG'S REVENGE.—A dog had been worried by another of greater strength, and when he returned to his home it was observed that he abstained from half the proportion of his allotted food, and formed a kind of store from his savings. After some days he went out, and brought several dogs of the vicinity back, and feasted them upon his hoard. This singular proceeding attracted the attention of his master, who, watching the result, observed that they all went out together, and, following them, he found they proceeded, by several streets, to the skirts of the town, where the leader singled out a large dog, which was immediately assailed by all his guests, and very severely punished.

A similar case happened in the precincts of London, where a person on business from Devonport had taken his dog. This animal having been maltreated by a Watch-dog, returned with his master home; but he was missed a day or two after, as well as a favorite companion of his, a very large House-dog, and neither were seen for about ten days. They had scarcely returned before a letter arrived, informing the owner of the dog that that animal, in company with another, had been seen at the place where he had been maltreated, and that they had killed the dog who gave the first offence.

CANINE FIDELITY.—In the virtues of fidelity and constancy the dog furnishes the highest models for our admiration and gratitude. Numberless are the cases where they have been found on fields of battle, lying by and watching the bodies of their slain masters. In 1660, S. Bochart relates a case, then still witnessed at Paris, by all who chose, of a dog who had followed his master's bier to the grave three years before, and was then remaining on the spot, where, indeed, he continued to the end of his life.

A similar case occurred in the last half century, at Lisle, where the admiration of the neighborhood caused a hut to be built for the dog upon the grave of his master, and food to be brought him. The faithful creature resided on the spot for nine years, when he died.

Another instance of the persevering fidelity of the dog, is recorded by a Scotch writer. A shepherd on the Grampian Mountains having left his child at the foot of a hill, was soon enveloped in mist, and, unable to return to the exact place, failed to find the child. In vain he sought for it in the midst of the mist, not knowing whither he went; and when, at length, the moon shone clearly, he found himself at his cottage, and far from the hill. He sought in vain the next day, with a band of shepherds.

On returning to his cottage, he found that the dog had disappeared during his absence, with a piece of cake. Struck with this circumstance, he remained at home, and when the dog, as usual, departed with his piece of cake, he resolved to follow him. The dog led the way to a cataract at some distance from the spot where the shepherd had left his child. The banks of the waterfall almost joined at the top, yet, separated by an abyss of immense depth, presented that abrupt appearance which so often astonishes and appalls the shepherds amidst the Grampian Mountains. Down one of these rugged and almost perpendicular descents the dog began, without hesitation, to make his way, and at last disappeared in a cave, the mouth of which was almost on a level with the torrent. The shepherd with difficulty followed; but, on entering the cave, what were his emotions, when he beheld his infant eating, with much satisfaction, the cake which the dog had just brought him, while the faithful animal stood by, eying his young charge with much complacency. From the situation in which the child was found, it appears that it had wandered to the brink of the precipice, and either fallen or scrambled down till it reached the cave, which the dread of the torrent had afterwards prevented it from leaving. The dog, by means of his scent, had traced it to the spot, and afterwards prevented it from starving by giving up to it his own daily allowance. He appears never to have quitted the child by night or day, except when it was necessary to go for its food, and then he was always seen running at full speed to and from the cottage.

SAGACITY OF DOGS. — A dog had delayed entering a ferry-boat at Sol-tosh, near Devonport, England, and, swimming after it, found that the tide swept him away. In this emergency he exhibited as much reason as a man, and more than some men would have been capable of. Instead of persevering, he swam back, and surveying the distance, in connection with the velocity of the current, as if making some mathematical calculations, ran some rods along the shore, *up the stream*, plunged in again, and reached the landing-place on the opposite side in safety.

Dr. Macculloch relates, of his own knowledge, several singular anecdotes of a Scottish Shepherd's dog, who always eluded the intentions of the household respecting him, if aught was whispered in his presence that did not coincide with his wishes.

The instinctive perception which dogs have of the nature of property, is singularly evinced in the case of a lady at Bath walking out, and finding her progress impeded by a strange Mastiff-dog, until, half-alarmed, she discovered the loss of her veil, when, retracing her steps, the dog went on before her, till the article was recovered; and then the animal hastened after his own master.

Again, a lad, upon a hard-trotting horse, having allowed the cakes he had bought to be tossed out of his basket, had scarcely discovered his loss and dismounted, when the House Dog, who had followed him, came home with the greater part in his mouth. These he had no sooner dropped, than, running back, he fetched the remainder.

But their capacity for understanding certain wishes of man, is curiously evinced in the Pariah Dogs, belonging to the Sepoy soldiers in India. As these men are of many different creeds and castes, scarcely any two can cook together, or use the same vessel ; they are even jealous of a defiling shadow passing across their food. But their duties not permitting personal superintendence, many have dogs so trained as to keep off all strangers. These animals will stand on their hind feet, and, springing in the air, drive away an argeelah, or a stooping vulture, being even careful that their own shadow does not cross the vessels containing the food.

The benevolent feelings and prescience of impending consequences of dogs are often strikingly exemplified. A Cur Dog had been maliciously thrown into a roaring sluice, when a Water Dog, who had been standing by, and observed the cruel act, immediately, of his own accord, plunged into the current, and brought the Cur safely out. And in another instance, of a Pomeranian Dog, belonging to the master of a Dutch Bylander vessel : A child had fallen overboard unobserved by any person. This creature sprang into the water, caught up the child, and swam to the shore with it, before any person had discovered the accident.

The most remarkable of these, however, is that of a Swiss Chamois-hunter's Dog, who, being on the glaciers with an English gentleman and his master, observed the first approaching one of those dreadful crevices in the ice to look down into it. He began to slide towards the edge ; his guide, with a view to save him, caught his coat, when both slid onward, till the dog seized his master's clothes, and rescued them both from inevitable death. The gentleman left the dog a pension for life.

A more remarkable presentiment of danger affecting themselves appears in the notice Captain Fitzroy gives of the earthquake at Galeahuasco, on the 20th of February, 1835, where it appeared that all the dogs had left the town before the great shock which ruined the buildings was felt.

THE SMUGGLING DOG. — The public authorities in France, having made strenuous endeavors to abate smuggling between the frontiers of Belgium and that kingdom, discovered that they had only transferred the practice from men to dogs, who were trained to carry lace, and other small articles, securely packed, across fields and rivers, where a whole army of custom-house and other officers were inadequate to arrest them. One man engaged in this business trained an active and sagacious Spaniel to aid him in his

enterprise. He caused him to be shaved, and procured for him the skin of another dog, of the same hair and same shape. He then rolled the lace round the body of the dog, and put over it the other skin so adroitly that the trick could not easily be discovered. The lace being thus arranged, the smuggler would say to the docile messenger, "Homeward, my friend." At these words the dog would start, and pass boldly through the gates of Malines and Valenciennes, in face of the vigilant officers placed there to prevent smuggling. Having thus passed the bounds, he would await his master at a little distance in the open country. Here they mutually caressed and feasted, and the merchant placed his rich package in a place of safety, renewing his occupation as occasion offered. Such was his success, that in less than five years he amassed a handsome fortune.

He was, however, at length betrayed, and notwithstanding all his efforts to disguise the dog, he was watched and discovered. But the cunning of the dog was equal to the emergency. Were spies watching for him at one gate, he saw them, and made for another; were all the gates shut, he sometimes leaped over the walls, at others, passing them secretly behind a carriage, or running between the legs of travellers, he thus would accomplish his end. One day, however, while swimming a stream near Malines, he was shot, and died in the water. There was then about him five thousand crowns' worth of lace, the loss of which did not afflict his master; but he was inconsolable for the loss of his dog.

THE BOOTBLACK'S POODLE.—A bootblack, who stationed himself on the Pont Neuf, in Paris, to prosecute his business, taught a Poodle Dog to roll himself in the mud, and then brush by gentlemen, so as to soil their boots. In this way the animal contributed largely to the support of his master.

We will close this series of canine anecdotes with the following incident, interesting from its recent occurrence and connection with an event which has fixed the attention of the whole civilized world:—

THE EMPEROR'S DOG.—The present enlightened Czar of Russia had a favorite dog, named "Milord," of which he was very fond. The dog had the privilege of entering even into the emperor's sleeping apartment, and his appearance on the imperial terrace was a never-failing indication of the proximity of his imperial master. When the czar was about to leave for Paris, a discussion arose as to the advisability of the animal's accompanying him. It was decided, however, to leave him behind. The czar arrived at Paris, attended the great Exposition of Art, Industry, and Science, in 1867, and when riding one day with Napoleon III., came near being assassinated by a fanatical Polander. Meanwhile the dog, overcome by grief, occasioned by this separation from his master, pined away, and seemed to

be under the influence of some strange excitement. He daily grew worse, and died at length in convulsions, on the very day and hour in which the attempt was made on the life of his master.

The anecdotes of the Canidæ, which have been collected from various quarters, if brought together in one series would form several considerable volumes. We have introduced here all that our limits allow, and we believe a sufficient number to illustrate the peculiar characteristics of these animals. When we consider them in all their bearings, and subject these extraordinary facts to a philosophical examination, we must be irresistibly impelled to the conviction that dogs have been created especially to be the companions and defenders of man, and therefore have been endowed with a higher degree of the reasoning power than many other animals. With these facts in view, we can well understand why the wild hunters of the forests regarded their dogs with such superstitious reverence, and believed that they would share in the immortality of their masters ; that, in a word,

“ In hunting-grounds, beyond the western sky,
Their faithful dogs should bear them company.”

Other anecdotes will frequently occur in connection with the descriptive history which will follow hereafter.

THE DOG IN MYTHOLOGY. — The sagacity of the dog as a guide, his efficiency as a watch and protector, and his fidelity as a companion, in a very early age of the world, caused his figure to be employed as symbolical of abstract ideas. His image became the universal designation of fidelity ; his coercive instinct, that of the two hemispheres ; for so the Egyptians typified them on each side of the hawk in their processions, and explained the meaning to be, that these compelled the Sun — the Hawk — to keep his course within the zodiac. In the surgical capacity, they were represented by the embalming priests, who wore masks of black dogs' heads before their faces. In that of watching, the dog Anubis, Sothis, Astrocyon, Ailurus, or Sirius, the Dog-star, — the Riser, — whose appearance warned the public of the approaching inundation of the Nile. Anubis was also the personification of wisdom. In the Egyptian mysteries, the conductor of the neophytes was a representative of Anubis, the conductor of the dead, and wore a costume representing a dog's head.

In the character of nurse, Theba — the Bitch — was the Ark ; the preserving and renovating asylum of man. This doctrine spread through all the systems of initiation, classical as well as barbarian, as far as the British Druids. The Egyptians also manifested their fear and abhorrence of the Scythic, or shepherd conquerors, after their expulsion, by sacrificing to the god Typhon (*Evil*), red-haired men, oxen, and red dogs.

The Greeks, who were more attracted by the poetry than by the abstract meaning of their own or their neighbors' religious emblems, after placing Cerberus to watch the gates of their infernal regions, notice them most in hunting scenes, and in the fabulous or actual deaths of heroes and real personages, by the agency of dogs; although even here they are probably mere types, including the fate of Actaeon, and of Eschylus, torn to pieces by Esterices,—not Terriers or House Dogs, as some seem to believe, but massacred by envious courtiers, on account of the honors paid him by King Attalus.

The Romans, too, had their legends, symbols, and ceremonies, in which dogs bore a conspicuous part. The image of a dog was placed in the vestibulum of their houses to guard the Penates. But in the symbolism of the Romans dogs did not always occupy a place of honor. In commemoration of their deliverance from destruction, and of the remissness the Capitoline Watch Dogs were guilty of on the night when the Senonic Gauls would have escaladed this last stronghold of the republic, and geese alone were watchful, they had annually a ceremony, wherein a dog was crucified upon an elder-tree, between the temples of Summanus and Juventus; and all dogs seen about the streets were then flogged, in punishment of the neglect of their ancestors.

In the fire-worship initiation of the Zendavesta, the mystical dog that repels Darkness and his agents, is portrayed with the eyes and eyebrows yellow, and the ears white and yellow. The animal is still an object of reverence with all the Parsees in India. Among the Ptembarii of Ethiopia a living dog was kept and worshipped as an inspired being, whose voice and actions were interpreted by priests.

In all the mythologies of the ancient world the dog was generally a symbol of good signification, or at least of fidelity, however it may have been employed. The Jews were not fond of dogs, and consequently we find them employed by Hebrew writers as types of whatever is wicked or unclean, an example of which we find in the Apocalypse: "For without are *dogs*, and sorcerers, and murderer," &c.

SPECIFIC DESCRIPTION OF DOGS.

We proceed now to give a description of several species of Canines, selecting those that present the most interesting features, and at the same time best illustrate the habits and characteristics of the entire family. The Feral or Wild Dogs we shall pass over without notice; the names of the different species may be found in our synopsis. Those who desire a further acquaintance with them are referred to the "Naturalist's Library," an excellent work, in forty volumes, 16mo., from which we have derived many of the anecdotes just given.

THE SIBERIAN DOG (*Canis Sibericus*).—This variety of the Arctic group differs in stature very considerably. The ears resemble those of a bear; the head that of a wolf; and the tail is like a fox's brush; in fur and color it looks like a grayish wolf. There may have been a cross of the great Prussian Watch Dog in this breed, for the dogs of Kamtchatka are smaller, though similarly formed. Their color is mixed black and white, the tips of the ears slightly drooping, and their attachment to home only a periodical instinct, which brings them to their masters' doors after they have roamed wild for many weeks to provide for themselves, and the time has come again when they are to resume their labors at the sleigh. From this period they are only fed with a very small proportion of the offals of putrid fish; being treated with absolute unkindness, they return the masters' behavior by a cunning and a rooted ill will. When about to be yoked to a sleigh they send forth a most dismal howling, but when once yoked in file they become silent, and move off at a rapid pace. There appears to be a vein of comical malice in them; for they will often suddenly jerk the sleigh in such a manner, and with an intelligible appreciation of the result, as will send their masters into a snow-bank up to the neck.

THE ESQUIMAUX DOG (*Canis borealis*).—This is the race of the Arctic Circle in America, most extensively spread, and clearly of the same origin as that of North-eastern Asia. These dogs are powerful in their structure, equalling the Mastiff in size, covered with long, rather curling hair, and with a bushy tail, very much curled over the back; the ears are short and pointed, and the face clothed with short hairs, as well as the lower part of the extremities.

They are remarkably intelligent, patient, and enduring, dragging sleighs with great rapidity, hunting with courage and skill, and carrying burdens without repining. Their temper is good, although in aspect they greatly resemble a wolf. Several were introduced into England by the members of the late Arctic Expedition, and we have seen two or three specimens in the United States. Many are black and white, others of a dingy white, and those on the coast of Labrador are often brown and white.

A gentleman who had one of these dogs in his possession thus describes him: "The Esquimaux Dog was possessed of very great sagacity in some respects, more than any dog I have ever seen. I may mention one instance. In coming along a country road a hare started, and in place of running after the hare in the usual way, the dog pushed himself through the hedge, crossed the field, and, when past the hare, through the hedge again, as if to meet her direct. It is needless to remark that the hare doubled through the hedge; but had it been in an open country, there would have been a noble chase. One particular characteristic of the dog

was, that he formed a particular attachment to his master; and however kind others might be, they never could gain his affection, even from coaxing with food, or otherwise, and, whenever set at liberty, he would rush to the spot where the individual of his attachment was. I may give one or two instances among many. One morning he was let loose by some of the men on the ground; he instantly bounded from them to my house, and the kitchen-door being open, found his way through it, when, to the great amazement of all, he leaped into the bed where I was sleeping, and fawned in the most affectionate manner upon me.

"Another instance was, when the dog was with me going up the steep bank of the Prince's Street Garden, I slipped my foot and came down, when he immediately seized me by the coat, as if to render assistance in raising me. Notwithstanding this particular affection to some, he was in the habit of biting others, without giving the least warning or indication of anger. He never barked, but at times had a sort of whine. He was remarkably cunning, and much resembled the fox; for he was in the practice of strewing his meat around him, to induce fowls or rats to come within his reach, while he lay watching, as if asleep, when he instantly pounced upon them, and always with success. He was swift, and had a noble appearance when running, and carried his fine bushy tail inclining downwards."

THE SHEPHERD'S, OR SHEEP DOG (*Canis domesticus*). — Buffon thinks this race, emphatically called the Familiar and Domestic Dog, the parent stock of the whole species, but there are few naturalists who coincide with him. The Sheep Dog is scarcely, if at all, inferior to the Newfoundland Dog in natural powers of intellect, and is superior to him in that long training to certain duties which require the utmost sagacity, vigilance, and patience, till it is contended by some that they are become innate. His civilization is, no doubt, older than the shepherd state of man, and we see in his conduct an instinctive impulse of order and of care, which is strongly impressed upon the sedate and self-possessed expression of his countenance. We have witnessed, with astonishment, with what rapidity, by a few words, or a sign of his master, a dog of this breed would fly over a vast surface of open country, single out, drive together, and bring up a particular class of sheep from among a large flock, and lead them to our feet. All this was effected without confusion, in a few moments, and without the least violence. We have witnessed the care they take of their charge, and with what readiness they chastise those that molest them, in the case of a Cur biting a sheep in the rear of a flock, and unseen by the shepherd. This assault was committed by a tailor's dog, but not unmarked by the other,

who immediately seized him, and dragged the delinquent into a puddle, and while holding his ear, kept dabbling him in the mud with exemplary gravity. The Cur yelled, the tailor came slipshod with his goose to the rescue, and having flung it at the Sheep Dog and missed him, stood by gaping, not venturing to fetch it back until the castigation was over, and the dog had followed the flock. (See Naturalist's Library.)

We will introduce here one more instance of the extraordinary intelligence of the Shepherd's Dog.

An English farmer, by the name of Hawkes, returning from market one night intoxicated, accompanied by his dog, fell amongst the snow. The night was one of the coldest ever known, and the snow, falling thickly, and whirled by the wind, was piling itself up in heaps. The drunken man lay on his back, unconscious. Now it is well known that a covering of snow will ward off the cold as well as a quilt or blanket. The dog was equal to the emergency, and acted with more intelligence than two thirds of mankind would have done. He carefully gathered the snow up around and over his master, and coiled himself up on his breast, thus protecting his vital parts. They lay thus the whole night, the snow meanwhile falling fast. In the morning a gentleman passing near, seeing this remarkable mound of snow, drew near it, when the dog jumped from the body, and discharged the blanket of snow from his back and sides by a vigorous shaking. The gentleman immediately recognized the prostrate man, who was taken to the nearest house, and soon recovered the use of his benumbed faculties. His gratitude to his dog was unbounded, and as a token of it he procured a silver collar for him to wear, which bore the following inscription: —

“In man true friendship long I strove to find,
But missed my aim;
At length I found it in my dog, most kind.
Man! blush for shame.”

THE MATIN DOG (*Canis laniarius*). — This is a large species, remarkable for strength, and possessing considerable intelligence. The nose is prolonged and pointed; the hair coarse; color white, with clouds of brown. In temper it is fierce, but not remarkable for courage.

The Cattle Dogs of Cuba are of this species, and are made very serviceable. Colonel Smith informs us that they are employed in the following manner: —

“When vessels with live stock arrive in the West Indies, and the oxen are hoisted out by a sling passed round the base of their horns, we have often witnessed the great assistance they afford in bringing them to land. For when the ox, first suspended by the head, is lowered, and allowed to

fall into the water, men generally swim and guide it by the horns, but at other times this service is performed by one or two dogs, who, catching the bewildered animal by the ears, one on each side, force it to swim in the direction of the landing-place, and instantly release their hold when they feel it touches the ground, for then the beast naturally walks up to the shore. These dogs have the form of the Dane, and the colors of a wolf, with a long, truncated tail, and generally a black spot over each eye, covering their small, half pendulous ears; their eyes are small, very bright, and the hair is rugged. There are some equal to Mastiffs in bulk and bone; but it is likely they are a cross with the Cuba breed of that race."

The reasoning powers of this dog may be inferred from the ensuing incident:—

"At a convent in France, twenty paupers were served with a dinner at a certain hour every day. A Matin Dog belonging to the convent did not fail to be regularly present at the repast, to receive the scraps which were now and then thrown to him. The guests, however, were poor and hungry, and of course not very wasteful, so that their pensioner did little more than scent the feast of which he fain would have partaken. The portions were served by a person at the ringing of a bell, and delivered out by means of what, in monasteries, is called a *tour*—a machine like the section of a cask, that, by turning round on a pivot, exhibits whatever is placed on the concave side without discovering the person who moves it. One day this dog, which had only received a few scraps, waited till the paupers were all gone, took the rope in his mouth and rang the bell. His stratagem succeeded. He repeated it the next day with the same good fortune. At length the cook, finding that twenty-one portions were given out instead of twenty, was determined to discover the culprit; in doing which he had no great difficulty, for, lying in wait, and noticing the paupers as they came for their different portions, and that there was no intruder save the dog, he began to suspect the truth, which he was confirmed in when he saw the animal continue, with great deliberation, till the visitors were all gone, and then pull the bell. The matter was related to all the community; and to reward him for his ingenuity, the dog was permitted to ring the bell every day for his dinner, on which a mess of broken viands was always served out to him."

THE NEWFOUNDLAND Dog (*Canis Terra Novae*).—This large and remarkable species is a native of Newfoundland. It is noted for its strength, its perseverance, its fidelity, and affection. In size it surpasses the Irish Greyhound. One of them, when desired to exhibit himself, stood up immediately, and placed his fore feet on the lintel of the door.

They are nearly all of a totally black color, excepting a bright, rust-

colored spot above each eye, somewhat fulvous towards the nose, throat, and upon the joints; there is also a little white about the feet and on the end of the tail. Their eyes are rather small, and of a light brown. This race is nothing inferior to the best Sheep Dogs in natural powers of intellect. Endless anecdotes of sagacity are related of them in their natural regions, as well as in Europe. The true breed of this race is almost semi-palmated; and consequently they swim, dive, and endure the water better and longer than any dog in existence. One was picked up in the Bay of Biscay, having been observed by a man at the mast-head, the ship whence he must have come being out of sight. A boat was lowered, and the animal, when taken in, did not give signs of extreme fatigue. No dog is better qualified to serve in harness, or fitter to watch and guard property on shore, or vessels in the coasting trade, rivers, or canals. As a water dog he can be taught to execute almost any command; and his kind disposition makes training easy, when used in the field.

A few years ago, the number about St. John's, in Newfoundland, was estimated at two thousand or more. They were left to shift for themselves during the whole fishing season, and probably still are thus suffered to remain starving, diseased, and even dangerous to the rest of the population. After that period they labor in drawing wood, fish, and merchandise; and one dog is estimated to be able to maintain his master during winter. True hydrophobia does not attack them there; but a kind of plague, originating in the neglect and misery they suffer, occasionally destroys great numbers.

We cannot refrain from recording here one or two additional anecdotes, which prove the reasoning powers of this animal. In Mr. Auspack's History of Newfoundland the following incident is related:—

"One of the magistrates of Harbor Grace had an old dog, which was in the habit of carrying a lantern for his master at night as steadily as the most attentive servant could; stopping short when his master made a stop, and proceeding when he saw him disposed to follow him. If his master were absent from home, on the lantern being fixed to his mouth, and the command given, 'Go, fetch your master!' he would immediately set off and proceed directly to the town, which lay at a distance of more than a mile from the place of his master's residence. He would then stop at the door of every house which he knew his master was in the habit of frequenting, and laying down his lantern, would knock at the door, and growl until it was opened. If his master were not there, he would proceed farther until he had found him. If he accompanied him only once into a house, it was sufficient to induce him to take that house in his rounds."

Here is another, of which Mr. Youatt, the author of an excellent work,

entitled "Humanity to Brutes," was an eye-witness. A gentleman wanting one day to go through an iron gate, from one part of his premises to another, found a lame puppy lying just within, so that he could not get in without rolling the poor animal over, and perhaps injuring it. He stood for a moment hesitating what to do, and at length determined to go round through another gate. A fine Newfoundland Dog, however, which had been waiting patiently for his wonted caresses, and perhaps wondering why his master did not get in as usual, looked accidentally down at his companion. He comprehended the whole business in a moment, put down his great paw, and as gently and quickly as possible rolled the invalid out of the way, and then drew himself back, in order to leave room for the opening of the gate.

GREAT ST. BERNARD DOG.—This race is nearly allied to the Newfoundland Dog in form, stature, hair, and colors; but the head and ears are like that of a Water Spaniel.

There is another race trained to the same service, with close, short hair, and more or less marked with gray, liver-color, and black clouds, betraying an intermixture with the race of French Matin, or Great Danish Dogs. Both are trained in the winter time to carry a basket with some food and wine; and, thus equipped, they sally forth from the Hospice of St. Bernard, and other passes, in search of travellers who may have lost their way, or fallen beneath the snows of the preceding night. They are followed by the monks devoted to that service of humanity, and every winter several lives are saved by their united means. Sir Thomas Dick Lauder possessed one of these animals, and gives the following description of him:—

"He was brought home by Sir Hugh Dalrymple, Baronet, of North Berwick, direct from the Great St. Bernard, and Sir Hugh presented him to me in December, 1837, when he was a puppy of about four or five months; so that he may now be reckoned about a year and nine months old. He can hardly, therefore, be said to be his full size. His bark is tremendous; so loud, indeed, that I have often distinguished it when in the meadow walk nearly a mile off. To it I was indebted for the recovery of the dog when stolen by some carters not long after I got him. He had been some time missing, when, to my great joy, one of the letter-carriers brought him back; and the man's account was, that in going along a certain street he heard his bark from the inside of a yard, and knew it immediately. He knocked at the gate, and immediately said to the owner of the premises, 'You have got Sir Thomas Lauder's big dog.' The man denied it. 'But I know you have,' continued the letter-carrier. 'I can swear that I heard the bark of Sir Thomas's big dog; for there is no other dog in or about all Edinburgh that has such a bark.' The man then

admitted that he had a large dog, which he had bought for a trifle from a couple of coal-carters; and at last, with great reluctance, he gave up the dog to the letter-carrier, who brought him home. But though Bass's bark is so terrific, he is the best natured and most playful dog I ever saw; so much so, indeed, that a small King Charles Spaniel Lapdog used to tyrannize over him for many months after he came here from abroad. I have seen the little creature run furiously at the great animal when gnawing a bone, who instantly turned himself submissively over on his back, with all his legs in the air, whilst the Spaniel, seizing the bone, would make the most absurd and unavailing attempts to bestride the enormous head of his subdued companion, with the most ludicrous affectation of the terrible growling that might bespeak the loftiest description of dog indignation. Bass has for some time ceased to tolerate this tyranny, having upon one occasion given the little fellow an admonitory shake; but he is at all times in perfect good humor with him, though the Spaniel, from jealousy, is always glad to avail himself of an opportunity of flying at him. When a dog attacks Bass in the street or road, he runs away rather than quarrel; but when compelled to fight, by any perseverance in the attacking party, he turns upon him, throws his enemy down in a moment, and then, without biting him, he lays his whole immense bulk down upon him till he nearly smothers him. But this extreme softness arises from his youth; for if he were once fairly engaged, I have no doubt that he would be most formidable either to quadruped or biped who should venture to attack him. To give you an idea of his strength, I may tell you an anecdote which happened a good many months ago. He took a particular fancy for one of the postmen who deliver letters here, though he was not the man whom I have already had occasion to mention. It was the duty of the postman I now allude to, to carry a letter-bag from one receiving house to another, and this bag he used to give to Bass to carry. Bass always followed that man through all the villas in this neighborhood where he had deliveries to make; and he invariably parted with him opposite to the gate of the Convent of St. Margaret's, and returned home. When our gate was shut here, to prevent his following the postman, the dog always leaped a high wall to get after him. One day, when the postman was ill, or detained by some accidental circumstance, he sent a man in his place. Bass went up to the man, curiously scanning his face, whilst the man rather retired from the dog, by no means liking his appearance, and very anxious to decline all acquaintance with him. But as the man left the place Bass followed him, showing strong symptoms that he was determined to have the post-bag. The man did all he could to keep possession of it. But at length Bass, seeing that he had no chance of getting possession of the bag by civil

entreaty, raised himself on his hind legs, and putting a great fore-paw on each of the man's shoulders, he laid him flat on his back in the road, and quietly picking up the bag, he proceeded peaceably on his wonted way. The man, much dismayed, arose and followed the dog, making, every now and then, an ineffectual attempt to coax him to give up the bag. At the first house he came to he told his fears, and the dilemma he was in; but the people comforted him, by telling him that the dog always carried the bag. Bass walked with the man to all the houses at which he delivered letters, and along the road till he came to the gate of St. Margaret's, where he dropped the bag, and, making his bow to the man, he returned home. I presume I have now given you enough of Bass. His companion, Raith, is remarkable for having, in his eagerness to bark at some noise at the outer door, jumped out of a window, twenty-three feet and a half high, on the hard gravel. He was stunned for a time, but he broke no bones, and after about an hour's repose on his usual pillow in the large dining-room chair, he showed that he was as well as ever."

THE BEAGLE.—Concluding from what we have been able to learn from the general history of dogs, we infer that the Beagle is the same as the Brachet of the middle ages, and think it the only species of the long-eared dogs known in the West during the Roman Empire, and noticed by Oppian under the name of Agasseus. Both Pennant and Whitaker quote the text, which, nevertheless, is more applicable to the ancient Teaser Terrier than the Beagle; but as there were rough-haired Brachets in the olden time, and severe hunting is still liable to produce crooked-legged Turnspit offspring, it is possible that this last was meant. The Breac they could not, however, then be, because, as already observed, that name implied spot, or spotted, a distinction which the Beagle Hound retains. A proportion, or what was termed a *cry* of these dogs, was anciently added to a hunting pack, often on account of their musical voice. They were most common in the North of England, and hence known by the name of Northern Hounds. There exists on the Continent a coarse-haired, buff-colored hound, of a mixed breed, figured by Buffon under the name of *chien courant metis*, apparently formed out of the French Braque and the crisp-haired Water Dog; it is now uncommon, probably neglected, because of its want of beauty, though formerly much esteemed in otter hunting, and in the chase where the country was swampy and intersected with rivers.

Both the rough and smooth races, even three centuries past, were already greatly diversified by different crossings. In Queen Elizabeth's reign was bred a race so small that a complete cry of them could be carried out to the field in a pair of panniers. That princess had little singing Beagles which could be placed in a man's glove! At present they are about twelve or

fourteen inches at the shoulders, stout and compact in make, with long ears, and either marked with a bright streak or spot of white about the neck, on a dark brown coat, or white, with spots like the Harrier, of black and rufous. They are slow, but persevering, and are sufficiently sure of killing their game. (See Plate VIII.)

BLOODHOUND (*Canis sanguinarius*). — Although anciently this breed used to be employed to follow the track of a wounded beast, or to lead the huntsman to the lair before the toils were set, it is now kept rather for the sake of its beauty than utility. In Germany there are two breeds, one (*Schweisshund*), smaller and lighter, and the other (*Leithund*), the true Bloodhound.

An English breed is described by Mr. Bell, in his account of British quadrupeds, as standing twenty-eight inches high at the shoulder, the muzzle broad and full, the upper lip large and pendulous, the vertex of the head protuberant, the expression stern, thoughtful, and noble, and the original color a deep tan, with large black clouds. This animal does not bark when hunting, and thence may be easily distinguished from other hounds.

BULL DOG (*Canis Anglicus*). — We have given a representation of this animal on Plate VIII. (q. v.), which communicates a very good idea of his general appearance, but confess a repugnance to this dog, and consequently have not observed him with the interest and attention we have accorded other species. He is below all the Hound tribe in attachment and sagacity, and is chiefly popular with a class of persons who do no credit to humanity.

In stature the present race is rather small, but obviously formed for strength and velocity. In color it is reddish-buff, with the nose and chaps only black. This dog differs from all others in giving no warning of his attack by barking; he grapples with his opponent without in the least estimating their comparative weight or powers. Colonel Smith says he has seen one pin an American bison, and hold his nose down till the animal gradually brought forward his hind feet, and, crushing the dog to death, tore his muzzle out of the fangs, most terribly mangled.

This dog, however, is capable of some attachment to his master, whom he is always ready to defend. His strength is so great that in pinning a bull one of this breed of dogs has been known, by giving a strong, muscular twist of his body, to bring the bull flat on the ground. In consequence also of his great strength and perseverance, he can swim farther than any other dog has been known to do; and not many years since, one of them saved a shipwrecked crew by towing a rope from the vessel to the shore, even after two fine Newfoundland dogs had perished in the attempt — a result unquestionably owing to that indomitable courage which does not allow him to yield while life remains.

MASTIFF (*Canis urcanus.*) — There are several species of Mastiffs, but the English is the most valued, being more elegant and majestic. Its color is buff, varying in shade, with dark nose and ears. As a watch-dog, the Mastiff has no superior. He will observe the motions of a thief with the closest attention, even walk by his side without doing him any bodily injury, but resolutely forbidding him from touching a single article. He has a remarkable sense of self-respect and personal dignity, and, besides, is sometimes actuated by motives of benevolence. Of this last we witnessed a remarkable manifestation a few years since in New York, where we then resided. A small dog was attacked by a larger one, and sorely pressed. At this juncture a Mastiff came along, and, contemplating the unequal combat for a moment, rushed upon the larger dog, knocked him over, and, raising one of his hind legs, after the fashion of dogs, manifested his contempt for him in a most extraordinary manner. In the Naturalist's Library a similar instance is related. "A Mastiff, at Plymouth, England, passing up Union Street, was beset by a whole troop of curs, till they quite impeded his sober walk, sufficiently to excite his resentment, and accordingly he lifted one of his hind legs and astonished them."

The courage of the Mastiff is well attested. It is said that in the reign of Henry VII. a Mastiff attacked singly, and conquered, a lion. That monarch, who regarded the lion as the king of all beasts, ordered the poor animal to be hanged for daring to assail his sovereign.

A young man once, going into a house of public entertainment at Paris, was told that his dog, a fine Mastiff, could not be permitted to enter, and he accordingly was left with the guard at the door. The young man had scarcely entered the lobby when his watch was stolen. He returned to the guard, and prayed that his dog might be admitted, as through his means he might discover the thief: the dog was suffered to accompany his master, who intimated to the animal that he had lost something. The dog set out immediately in quest of the strayed article, and fastened on the thief, whose guilt, on searching him, was made apparent: the fellow had no less than six watches in his pocket, which being laid before the dog, he recognized his master's, took it up by the string, and bore it to him in safety.

THE DALMATIAN DOG is a native of Dalmatia, a mountainous country on the Adriatic. It is sometimes erroneously confounded with the Danish Dog.

From the general structure of the animal, we are of opinion it should be placed with the hounds; but though a very handsome variety, inferior to none of the above in elegance of form and beautiful markings, it is, with some dissent, however, said to be without powers of nose, or much sagacity, and therefore invariably intrusted to the stables, where it familiarizes with horses.

This animal is employed chiefly as a coach-dog, and is capable of strong attachment to horses and other animals. A gentleman of Manchester, England, had a small Dalmatian Dog which was accustomed to be in the stable with two of his carriage-horses, and to lie in the stall with one of them, to which he was particularly attached. The servant who took care of the horses was ordered to go to Stockport, which is distant seven miles, upon one of the horses, and took the favorite of the dog with him, leaving the other with him in the stable; being apprehensive lest the dog, which was much valued by his master, should be lost upon the road. After the man and horse had been gone about an hour, some person coming accidentally into the stable, the dog took the opportunity of quitting his confinement, and immediately set off in quest of his companion. The man, who had finished the business he was sent upon, was just leaving Stockport, when he was surprised to meet the dog he had left in the stable coming with great speed down the hill into the town, and seemed greatly rejoiced to meet with his friendly companion, whom he had followed so far by scent. The friendship between these animals was reciprocal; for the servant going one day to water the carriage horses at a large stone trough, which was then at one end of the exchange, the dog, as usual, accompanying them, was attacked by a large Mastiff, and in danger of being much worried, when the horse, — his friend, — which was led by the servant with a halter, suddenly broke loose from him, and went to the place where the dogs were fighting, and with a kick of one of his heels struck the Mastiff from the other dog, far into a cooper's cellar opposite; and having thus rescued his companion, returned quietly to drink with him at the conduit.

THE POODLE (*Canis aquaticus*). — This species is described as having the head large and round, the cerebral more developed than in others, the frontal sinus expanded, the ears long, and legs short. The hair is very long and curly, the color white, or black and white, or rufous. The Poodle is a German dog, and was introduced into France during the Revolution, and thence made its way, as a general favorite, in all civilized countries. It is remarkable for its intelligence, and the strength of its attachment to its master, and possesses an extraordinary faculty for discovering lost property. It is a general favorite with ladies and children.

SUB-GENUS II. LUPUS — THE WOLF.

In their anatomy and dentition the wolves do not differ materially from the true dogs, but in size and strength they generally surpass the largest of the latter. The real difference between the wolf and domestic dog is of a moral character, and lies in that mysterious inward something which impresses itself on the external features, and gives complexion to the outward

life. Thus the gentle, confiding, and affectionate nature of our familiar dogs is rendered visible in the mild expression of the eyes and countenance, and in all their habits and demeanor; while, on the contrary, the malignant, cruel, and treacherous nature of the wolves is as strongly expressed in the sinister eyes, that burn in the dark like coals of fire, and the gaunt form and haggard countenance, whose wild and fearful expression resembles that of a human villain, who, while he is meditating new crimes, yet shakes with fear before the vision of the retribution that will swiftly overtake him.

There are many species of wolves, but they vary so little in all essential particulars, that one description will suffice for the whole. (See Plate IX.)

They have the head broad; muzzle pointed; eyes distinct, oblique, small, and malignant. The tail, hanging close between the legs, wants the flexibility of that of foxes, and the recurved attitude of that of dogs. They walk more on the ball of the feet than dogs, the fur is coarser, and their odor is very offensive. Their whole aspect, indicating vigilant malignity, fear, and cruelty, distinguishes them from the familiar species, even when in size and similarity of fur they approximate most closely. The muzzle, contracted below the eyes, is pointed, the edge of the lips black. On the cheek there are two or more hairy warts, and the bristles of the whiskers on the lips are short.

The principal species are the *Lupus vulgaris*, the Common Wolf of both the Old and New World; the *L. lycaon*, Black Wolf; *L. nubilus*, the Dusky Wolf; *L. Mexicanus*, Mexican Wolf; *L. latrans*, Prairie Wolf of North America; *L. cagottis*, Loup de Mexique, Cuvier; and *L. tigris*, the Jungle Koola.

From these the other wolf-like animals shade down through nearly, if not quite, forty species, terminating with the Aguara dogs and foxes.

Wolves inhabit the Northern Hemisphere from the Polar Seas to Central China, and Crihsna in India, Northern Persia, Natolia, Europe, Morocco, and the whole of North America. — As our limits will not permit us to enter into specific descriptions of these several families, we will proceed to give such sketches as will best serve to make the reader acquainted with the general character and nature of the whole.

THEIR HABITS. — Wolves howl more frequently when the weather is about to change to wet. They grovel with the nose in the earth, instead of digging with their paws, when they wish to conceal a part of their food or the droppings about their lairs. The parent wolves punish their whelps if they emit a scream of pain; they bite, maltreat, and drag them by the tail, till they have learned to bear pain in silence. Wolf-hunters commonly assert that the animal is weak in the loins, and when first put to speed, that his hind quarters seem to waver, but when warmed, that he will run without

halting from the district where he has been hunted, taking a direct line for some favorite cover, perhaps forty miles or more in distance. On these occasions he will leap over walls above eight feet high, cross rivers obliquely with the current, even if it be as broad as the Rhine, and never offer battle unless he be fairly turned; then he will endeavor to cripple the opponent by hasty snaps at the fore legs, and resume his route. The track of a wolf is readily distinguished from that of a dog by the two middle claws being close together, while in the dog they are separated; the marks, however, when the wolf is at speed, and the middle toes are separated, can be determined by the claws being deeper, and the impression more hairy; the print is also longer and narrower, and the ball of the foot more prominent.

Inferior in wily resources to the fox, the wolf is nevertheless endowed with great sagacity. His powers of scent are very delicate, his hearing acute, and his habits always cautious. The European variety is naturally a beast of the woods; those of the arctic regions and of the steppes of Russia and Tartary have different manners, probably from necessity, not choice. It is said that the burrows of wolves are originally the work of other species, such as bears, badgers, wolverines, jackals, and foxes. They only fit them for their own use; and when they burrow, it is always in communities, so that not even bears can dislodge them. In France and Southern Germany they now retreat under fallen leaves, in the hollows under large and old roots, in caves, clefts of rocks, or overhanging banks, but always in the most secluded and dense covers. We have seen a wolf's den in Canada, in a hollow tree accessible between some high roots.

In well-inhabited countries, where wolves are an object of constant persecution, they never quit cover to windward; they trot along its edges until the wind of the open country comes towards them, and they can be assured by their scent that no suspicious object is in that quarter; then they advance, snuffing the coming vapors, and keep as much as possible along hedges and brushwood to avoid detection, pushing forward in a single foray to the distance of many miles. If there be several, they keep in file, and step so nearly in each other's track, that in soft ground it would seem that only one had passed. They bound across narrow roads without leaving a footprint, or follow them on the outside. These movements are seldom begun before dusk or protracted beyond daybreak. If single, the wolf will visit outhouses, enter the farmyard, first stopping, listening, snuffing up the air, smelling the ground, and springing over the threshold without touching it. When he retreats, his head is low, turned obliquely with one ear forward, the other back, his eyes burning like flame. He trots crouching, his brush obliterating the track of his feet, till at a distance from the scene of depredation; when, going more freely, he continues his route to cover, and as he enters it, first raises his tail and flings it up in triumph.

THEIR AUDACITY AND COWARDICE.—These animals exhibit a strange admixture of these opposite qualities, and in this is seen their vast inferiority to the true dogs. In the face of success, or driven by hunger, they seem endowed with all the boldness of the lion; but, defeated in their purposes, or captured, they exhibit all the trepidation of the hare, and appear to be paralyzed with fear. An instance of their audacity is recorded by a French writer. In the commencement of the reign of Louis XIV. of France, in the depth of winter, a party of dragoons was attacked, at the foot of the mountains of Jurat, by a multitude of wolves. The dragoons fought their savage assailants bravely, and killed many hundreds of them; but at last, overpowered by numbers, they and their horses were all devoured. A cross is erected on the place where this extraordinary battle took place, with an inscription in commemoration of it, which continues standing to this day.

The following is still more remarkable. Some time during the winter of 1866-7 a pack of wolves actually attacked a railway train in the south of France! It was loaded with freight, some of the cars containing sheep and cattle of various kinds, the scent of which attracted the wolves. The train was moving slowly on account of the snow, and finally stopped entirely. The men defended themselves with axes, and whatever weapons they could command, and killed several of the animals; but the marauders, nevertheless, obtained some booty, and kept the train in a state of siege till the dawn, when, with a terrific howl, they rushed into the forest.

During winter, when food is scarce, wolves often suffer the extremes of famine. Foiled in catching their prey, they are reduced to peel off the bark of some trees, and even to load their stomachs with clay. It is then they will rush upon danger. The French newspapers of January, 1838, contained an account of an old wolf attacking a group of seventeen persons, wounding and disabling several, till he was struck dead with an axe. It is at that period they assemble in troops of from ten to twenty-five, and boldly enter the streets of hamlets to attack the dogs that may be out of doors; and if one of their own troop be wounded severely, the others immediately devour him. At the close of the appalling famine which desolated India, now more than a quarter of a century ago, the wolves, always numerous and but little molested, had become so daring, that in open day they prowled through the villages, and became exclusively fond of human flesh. It was necessary to hunt them down, and to take them in traps and pitfalls. Many contrivances for this purpose exist in India, and a vast number were taken. It had often been observed in Europe that wolves, when taken in a trap, lost all their courage; and the same fact was likewise established in India, where single men went down into pitfalls and bound several of them without the least resistance. After a foray these animals separate again, accord-

ing to Buffon, as soon as they regain the woods; but in wild countries, and where they burrow, this is not the case. Captain Williamson, in his Eastern Field Sports, relates the manner of smoking them out, and states that on one of these occasions a number of trinkets once attached to native children were dug out, and recognized by the parents.

In Northern India wolves roam and even burrow, occasionally, under the buildings of European occupants. One night a servant was sleeping in the veranda, with his head near the outer lattice, when a wolf thrust his jaws between the bamboos, seized the young man by the head, and made efforts to drag him through. His cries awakening the whole vicinity, the beast was compelled to quit his hold; but although encountered and struck at by many, he escaped. The man was nearly scalped and dreadfully lacerated, but recovered.

A peasant in Russia was once pursued in his sledge by eleven wolves. Being about two miles from home, he urged his horse to the very extent of his speed. At the entrance to his residence was a gate, which, being shut at the time, the frightened horse dashed open, and carried his master safely into the court-yard. Nine of the wolves followed them into the enclosure, when fortunately the gate swung back and shut them all, as it were, in a trap. Finding themselves thus caught, the animals seemed to lose all their ferocity, and, as escape was impossible, slunk into holes and corners, molesting no one, and offering no resistance. They were all despatched without further difficulty.

THEIR DOMESTIC HABITS.—Wolves do not acquire their full growth till after the end of the second year. The female produces from three to seven whelps at a litter. They are brought forth in holes, or under the most sheltered and impenetrable covers, where a bed of moss is gathered by the mother for their comfort and necessary warmth. The male wolves are accused of a desire to devour the whelps as long as they are blind; and the fact is well known that the females practise this unnatural brutality if the young have been handled, or her attention or suspicion be raised by some cause, which, it seems, excites in her an idea of apprehension for their safety, and is manifested by so singular a mode of expression. After the eyes are open, the male wolf is no longer an object of maternal fears. He then joins in the care of raising the young, and in bringing partridges, moorfowl, rats, and moles to the lair; and both stages of the whelps' existence indicate the further operation of secondary causes all in unison with those already noticed. With the growth of her progeny, the she-wolf increases in vigilance and in daring. By degrees they are led by her to drink, two or three times a day, to the nearest sequestered water. As they increase in stature, both the parents take them out to hunt.

It is at this time that families of wolves are often seen in company skirting the vicinity of habitations. By degrees, however, the young acquire strength, and ere the autumn ends the male has forsaken the troop, and taken to his solitary habits, the mother remaining with her litter, and often keeping together through the next winter and spring season; it appearing, either in Europe or America, that wolves by no means pair every autumn.

THEIR MODE OF ATTACK.—Wolves, when attacking cattle or horses, are said to take them by the throat or by the nose, till they pull them down. A French farmer, however, related that a horse of his, killed by a wolf the preceding night, had been seized by the tail and dragged over till it fell upon the side; and on visiting the remains of it the fact was verified, no wound appearing in front—the ham had been strung, and the wolf had fed exclusively on the solid parts of the buttock. A similar mode of attack appeared to have been adopted, where a cow was the victim of an American wolf, which came under our personal inspection. Sheep and lambs they actually carry off at a round pace, contriving to throw a part of their weight upon their shoulders. Captain Williamson describes a case that came under his own eyes, and where he, being on horseback, attempted to interpose; but the wolf laid down his burden, and gave signs of assailing the captain's horse; and he, being unarmed, felt the prudence of allowing him to escape with his prize. According to accounts received from the Don Cossacks, their horses, bred wild on the steppes, resist the attacks of whole troops of wolves. The mares form circles round the foals, and the stallions, remaining outside, resolutely charge them, and generally repel the attack, killing one or more of the enemy. Single horses fight a wolf by striking with the fore feet.

DISLIKE MUSIC.—It is well known that domestic dogs dislike music, but the antipathy appears to be much stronger in the wolf. Dogs become familiar with it, and have learned to endure it; but to the wolf it is intolerable. It would be well for those who live in countries infested by wolves to arm themselves with some loud-sounding musical instrument, as the following anecdote would suggest:—

A Scotch bagpiper was travelling in Ireland one evening, when he suddenly encountered a wolf, which seemed to be very ravenous. The poor man could think of no other expedient to save his life than to open his wallet and try the effect of hospitality. He did so, and the savage beast swallowed all that was thrown to him with such voracity that it seemed as if his appetite was not in the least degree satisfied. The whole stock of provision was of course soon spent, and now the man's only resource was in the virtues of his bagpipe. This the monster no sooner heard than he



took to the mountains, with the same precipitation with which he had left them. The poor piper did not wholly enjoy his deliverance, for, looking ruefully at his empty wallet, he shook his fist at the departing animal, saying, "Ay! are these your tricks? Had I known your humor, you should have had your music before your supper."

FOLLOW ARMIES. — Wolves are sometimes called the vultures of the earth. They snuff the odor of blood from afar, and rush to the field of carnage to gorge themselves with the slain. Much of the ubiquity, indeed, of the species in the northern and eastern hemispheres may be ascribed to the habit of following the more collective movements of men; for, allured by the scent of slaughter, by the numerous dead horses always left along the lines of operations of armies, wolves are known to follow in the rear to feed upon the carrion; and in India there have been instances when they actually mixed with the train of attendants, and carried off unguarded children. At other times they have attacked videttes, particularly in winter. During the last campaign of the French armies in the vicinity of Vienna, the *Moniteur* mentioned several of the outposts thus molested, and the videttes carried off, when a dead wolf and pieces of clothing showed what kind of enemy had been encountered. After the rout of the grand army in Russia, wolves of the Siberian race followed the Russians through Poland and Germany to the borders of the Rhine. Specimens killed in the vicinity, and easily distinguished from the native breed, are still preserved in the museums of Neuwied, Frankfort, Cassel, &c.

THEIR FEROCITY AND SLYNESS. — In Sweden frequent attacks are made upon the people by wolves during the winter, as they are then often in a famishing condition. In one instance a party of sixteen sledges were returning from a dance on a cold and starlight night. In the middle of this party was a sledge occupied by a lady; at the back of the vehicle sat the servant, and at her feet, on a bearskin, reposed her favorite lapdog. In passing through a wood, a large wolf suddenly sprang out, and jumping into the sledge, seized the poor dog, and was out of sight before any steps could be taken for his rescue.

The ferocity of these animals is often of a very treacherous character. We were told by a butcher of New York that he had brought up, and believed that he had tamed, a wolf, which he kept for above two years chained in the slaughter-house, where it lived in complete superabundance of blood and offal. One night, having occasion for some implement which he believed was accessible in the dark, he went in without thinking of the wolf. The butcher wore a thick frieze coat, and while stooping to grope for what he wanted he heard the chain rattle, and instantly he was struck down by the animal springing upon him. Fortunately a favorite cattle-dog had

followed his master, and he rushed forward to defend him. The wolf had hold of the man's collar, and being obliged to turn in his own defence, the butcher had time to draw a sticking-knife, with which he ripped his assailant open.

THE REASONING POWERS OF THE WOLF.—The following anecdotes would seem to show that wolves have intelligence enough to raise them to a level with domestic dogs, were it not for the unconquerable viciousness of their nature. It is said that a wolf, when pressed by hunger, and roaming around farms, will utter a single howl to entice the watch-dogs in pursuit of them. If they come out, he will flee till one is sufficiently forward to be singled out, attacked, and devoured; but dogs in general are more cautious, and even hounds require to be encouraged, or they will not follow upon the scent.

The prairie-wolf is said to be wonderfully cunning and sagacious. Instances have been known of his burrowing under ground to procure the bait from a trap, rather than run the chance of being caught above. Many and curious are the devices prepared to insnare this animal, but very few have succeeded. This variety of wolf is common in the prairies of the western country, where it hunts deer by running them down. Sometimes a large number associate together, and, forming a crescent, creep slowly towards a herd of deer, so as not to alarm them. They then rush on with hideous yells, and drive the poor animals towards a precipice, seeming to know that, when they are once at full speed, they will all follow one another over the cliff. The wolves then descend at leisure, and feed upon their slaughtered victims.

A farmer in France, one day looking through a hedge in his garden, observed a wolf walking round a mule, but unable to get at him on account of the mule's constantly kicking with his hind legs. As the farmer perceived that the beast was so well able to defend himself, he did not interfere. After the attack and defence had lasted a quarter of an hour, the wolf ran off to a neighboring ditch, where he several times plunged into the water. The farmer imagined that he did this to refresh himself after the fatigue he had sustained, and had no doubt that his mule had gained a complete victory; but in a few minutes the wolf returned to the charge, and, approaching as near as he could to the mule, shook himself, and spouted a quantity of water into the animal's eyes, which caused him immediately to shut them. That moment the wolf leaped upon him, and killed the poor animal before the farmer could come to his assistance.

CAPABLE OF ATTACHMENT.—We find recorded one instance of attachment and affection in this animal of a most extraordinary character, and considering the generally intractable, ferocious, and treacherous nature of

the species, we could scarcely give it credence, were not its truthfulness guaranteed by the great name of Cuvier, who relates it. But remarkable as the case is, it only proves that individual wolves, as lions, tigers, &c., may be trained, when taken young, to show some degree of attachment to their protector, while the savage nature yet remains, ready to resume its sway at the first opportunity.

The wolf that M. Cuvier refers to was brought up like a dog, and became familiar with every person he was in the habit of seeing. He would follow his master, seemed to suffer from his absence, evinced entire submission, and differed not in manners from the tamest domestic dog. The master, being obliged to travel, made a present of him to the Royal Menagerie at Paris. Here, shut up in his compartment, the animal remained for many weeks without exhibiting the least gayety, and almost without eating. He gradually, however, recovered. He attached himself to his keeper, and seemed to have forgotten all his past affections, when his master returned after an absence of eighteen months. At the very first word which he pronounced, the wolf, who did not see him in the crowd, instantly recognized him, and testified his joy by his motions and his cries. Being set at liberty, he overwhelmed his old friend with caresses, just as the most attached dog would have done after a separation of a few days. Unhappily his master was obliged to quit him a second time; and this absence was again, to the poor wolf, the cause of the most profound regret. But time allayed his grief. Three years elapsed, and the wolf was living very comfortably with a young dog which had been given to him as a companion. After this space of time, which would have been sufficient to make any dog, except that of Ulysses, forget his master, the gentleman returned again. It was evening, all was shut up, and the eyes of the animal could be of no use to him; but the voice of his beloved master was not effaced from his memory. The moment he heard it he knew it, and answered by cries indicative of the most impatient desire; and when the obstacle which separated them was removed, his cries redoubled. The animal rushed forward, placed his fore feet on the shoulders of his friend, licked every part of his face, and threatened by his teeth his very keepers who approached, and to whom an instant before he had been testifying the warmest affection. Such an enjoyment, as was to be expected, was succeeded by the most cruel pain to the poor animal. Separation again was necessary, and from that instant the wolf became sad and immovable; he refused all sustenance, pined away, his hair bristled up, as usual with all sick animals, and at the end of eight days he was not to be known, and there was every reason to apprehend his death. His health, however, became re-established; he resumed his good condition of body and brilliant coat; his keepers could again approach him; but he

would not endure the caresses of any other person, and he answered strangers with nothing but menaces.

This account, we do not doubt, is strictly true; but still it would not be safe to infer from it that the wolf is capable of complete domesticity. There is reason to believe that had this animal been set at liberty near the haunts of his tribe he would immediately have rejoined the band; or, still more, had he been accompanying his master in the same vicinity, and the latter being attacked by a pack of wolves, instead of defending him to the death, as a dog would, in all probability his brutal instinct would have returned, and he would have joined his brethren in killing and devouring his master.

THE WOLF IN MYTHOLOGY. — The wolf, like the dog, occupies a large place in the ancient mythologies, and, with few exceptions, is typical of ideas in harmony with the incorrigible ferocity of his nature.

The malevolent sagacity, fearful howling, and originally obtrusive pertinacity, which led the wolf to roam about the habitations of mankind, and show his sinister eyes flaming in the dark, were no doubt the cause of that mysterious power he was presumed to possess. We can trace in the earliest institutions, poems, and history of nations, the awe they inspired. The wolf was sacred to Apollo; a she-wolf having nursed him, as another nursed Remus and Romulus. The figure of one was adored by the people of Parnassus; it was a military ensign of the Macedonians, of the Romans, and of the Ostrogoths. In the metamorphosis of the ancients the wolf is conspicuous; and that demons assume its shape, that sorcerers and incantators alternately pass from the human to the lupine form, is believed by the vulgar throughout Europe and Asia; slightly modified, it is a common superstition in Abyssinia, and even among the Caffires. The Goldfoot (Wolf) is an attendant upon Odin, as he was more anciently upon Mars; and he is the type of the destroyer, under the name of Fenur, in the twilight of the gods, when, according to Scandinavian lore, the world shall perish, and the gods themselves will be consumed. If the Druids assumed the name of Red-eared Dogs, the priests of the Egyptians, Romans, and several other nations, including the Blotmennur of the North, were likewise designated as wolves. Some nations of antiquity, as well as the more recent noble tribes of Goths and Saxons, claimed the name of Wolves.

The

“*Tertia post Idus nudos Aurora lupereos,
Aspicit*”

of Ovid, relates to the priests of Pan at the Lupercalia. The Blotmen, or sacrificers, of the Gothic nations, wore wolfskin wrappers in their naked and sanguinary ceremonies.

The second tribe in point of dignity among the Ostrogoths (as we gather

from the oldest Teutonic poems) was that of the Wolfengen. The first family among the Saxons was the Whoelf, or Guelphic.*

THE JACKAL (*Jacalus*). — This group comprises several species of very voracious animals, which are found from the Indies and the environs of the Caspian Sea as far as Guinea. The jackal is about fifteen inches high at the shoulder, has the muzzle pointed, eyes small, and whiskers long; it is of a buff or yellow color grizzled with white or brown hairs, and the tail, which is shorter than that of the fox, is tipped with black. It is a gregarious animal, hunts in packs, and has many characteristics which distinguish dogs. It appears to be moved by an instinctive impulse to follow tigers and lions, uttering a peculiar cry, which seems to be a kind of warning to other animals of approaching danger. The opinion that the jackal attends the lion as a provider or discoverer of prey is fabulous. These animals have the cunning of the fox united with the energy of dogs; when attacked, fight desperately, and when overcome, pretend to be dead. Although Cuvier speaks of the facility with which they may be tamed, we have never yet met with any authentic account of any very considerable success in attempts of this kind.

They are nocturnal in their habits, seek their food in the night, feasting on everything that comes in their way, sometimes even digging into sepulchres, and devouring the dead bodies they contain. They assemble in great numbers, and the air resounds with their incessant howling. Their cry, as described by Mr. Bennet, is a melancholy sound, beginning the instant the sun sets, and continuing till after it has risen. The voice is uttered and responded to by all within hearing, in a concert of every possible tone, from a short yelp to a prolonged crescendo cry, rising octave above octave in the shrillness, and mingled with dismal whinings, as of a human being in distress. They hide themselves in old ruins, or burrow in large communities.

The specimen figured on Plate IX. is the *C. aureus* of Linnaeus. A large red jackal (*C. primævus*), inhabiting India, is said to resemble the Australian Dingo.

THE FOX (*Vulpes*). (See Plate IX.) — The fox is distinguished from wolves and dogs by a longer and more bushy tail, which reaches to the ground, and is well furnished with long hairs in the form of a cylindrical brush, and by a more pointed muzzle. It emits a very fetid odor; it has a propensity to burrow, and a nocturnal life. It is an unsociable animal, incapable of thorough taming, but while young full of vivacity and playfulness. It is, besides, shy, cautious, proverbial for cunning, and the acute-

* The word *Guelph*, so often met with in European history, and quite recently in references to Queen Victoria and Prince Albert, means *wolf*. The word is pronounced as if it were written *welf*.

ness of its senses, those of smell and hearing in particular. Its members are exceedingly pliant, the tail flexible, so that it can be rolled round the nose. When overcome it simulates death, like the jackal.

Foxes are found in all parts of the world, and though the general color is fulvous, species are known varying from clear white to coal black. They feed on small game, oysters, fish, carrion, grapes and other fruits. They grow to the second year, and live thirteen or fourteen. These animals are renowned for their sagacity, which, it is said, makes them more than a match for twenty of the best trained dogs. Many anecdotes are related illustrative of this, two or three of which we introduce here.

A fox finding himself hard run by the hounds, at a hunt in Ireland, ran up a stone wall, from which he sprang on the roof of an adjoining cabin, and mounted up to the chimney top. From that elevated station he looked all around him, as if reconnoitring the coming enemy. A wily old hound approaching, and having gained the roof, was preparing to seize the fox, when he dropped suddenly down the chimney. The dog looked wistfully down the dark opening, but dared not pursue the fugitive. Meanwhile the fox, half enrobed in soot, had fallen into the lap of an old woman, who, surrounded by a number of children, was gravely smoking her pipe, not at all expecting the entrance of this abrupt visitor. "*Emiladh devil!*" said the affrighted female, as she threw from her the red and black quadruped. The fox grinned, growled, and showed his fangs; and when the huntsmen, who had secured the door, entered, they found him in quiet possession of the kitchen, the old woman and children having retired, in terror of the invader, to an obscure corner of the room. The fox was taken alive without much difficulty.

The following exhibits the same characteristics:—

Two gentlemen in New Jersey went out to hunt rabbits. In a low, bushy swamp the dogs started a fox, and off they went in swift pursuit. After a chase of two miles he entered a very dense thicket, and, making a circuit of the place, returned to the point whence he first started. The dogs closely pursuing the fox, he again started for the thicket, when one of the sportsmen shot at him, and he fell, apparently dead, at his feet. As he stooped to pick him up, however, he rose upon his legs and escaped. For two hours and a half the thicket was the scene of his wiles; but at last he was taken, and being carried home by the men, was thrown, apparently quite dead, into the corner of the room. The family sat down to supper. Finding them all busily engaged, he ventured to reconnoitre, and had cautiously raised himself on his fore legs for the purpose, but, on finding himself observed, resumed his quiescent state. One of the party, to ascertain whether the fox was alive or not, passed a piece of lighted paper under his

nose; but the inanimate stone or log appeared not more senseless at that moment. Finding all attempts to get away unavailing, Renard submitted to his destiny with a very good grace, and the next morning was as well as ever, bating a slight wound in the shoulder and a dirty skin.

Some country people in Germany once caught a pike, but in conveying it home during the night it escaped. As it was a large fish, they returned with torches to secure their prize, and after some time found it on the grass, having fast hold of a fox by the nose. The animal caught in this novel trap made every effort to escape, without success; and it was not until the pike was killed that it was possible to separate them. It seems that after the pike was dropped by the fisherman the fox came across it, and in paying his addresses to it was received in the manner we have described.

There are several species in North America, the best known and most widely diffused of which is the Red Fox (*Vulpes fulvus*). This species is as mischievous and more cautious than the foxes of the Old World. It is hunted for its fur, which is very valuable. Then follow the Cross Fox, the Silver Fox, the Little Fox, the Tricolored Fox, and the Gray Fox, which last completes the American series.

The Arctic Fox—see Plate IX.—(*C. lagopus*) is of a deep ash color, although white in winter. It inhabits the frozen regions. M. Cuvier describes two African species, remarkable for the size of the ears, the *C. megalotis*, and the *C. zerda*, which has ears still larger. It is a very small species, of a whitish yellow, burrows in the sands of Nubia, and climbs trees with ease.

LYCAON.—The Wild Dog of the Cape (*Hyena venatica*) is distinguished by its tall, gaunt form, fur marbled with white, fulvous, gray, and blackish. In size it equals the wolf; has large ears tipped with black. It lives in packs, which often approach Cape Town, and devastate the environs.

HYÆNA.—The hyænas have three false molars above and four below, all conical, and singularly large; their upper carnivorous tooth has a small tubercle within and in front; but the lower one has none, presenting only two stout, trenchant points. This peculiar dentition enables them to crush the bones of the largest prey. They are nocturnal animals, and inhabit caverns, exceedingly voracious, subsisting chiefly on dead bodies, which they will even drag from the graves. They are animals of enormous strength, and ferocious to the last degree. The statement that they "are easily tamed," "susceptible of strong attachment," and "are employed in the character of watch-dogs, both in Asia and Africa," may be true, but is scarcely credible.

Three species are known—the Striped Hyæna (*H. vulgaris*), *C. hyæna*,

Linn.) (see Plate IX.), found from India to Senegal; the Spotted Hyæna (*H. crocuta*), inhabiting South Africa, and the Woolly Hyæna (*H. brunnea*).

Of all the mammalians they are the most brutal and disgusting. Their courage is extraordinary, fearing neither lions nor tigers, and standing in awe of man only in the daytime. Their whole appearance is repulsive in the extreme. A large head set on a protruded and stiff neck, high fore legs and short body, and low hind quarters, a long bristly mane, extending from the nape along the entire back, a short and ill-formed tail, an awkward gait, great personal uncleanness, and a horrible voice, all combine to form an image of indescribable ugliness.

It was, no doubt, the hideous character of these animals which led the ancients to regard them as allied to demons. It was believed by them that the species was hermaphrodite, and changed sex at stated periods, being alternately the hyæna and the trochus; that, to deceive mankind, it could imitate the human voice; and it is still averred that a caste of iron-smelters and smiths, in Abyssinia, possess the mysterious power of changing their persons into the aspect of hyænas, and perpetrate all the demon-wonders that were formerly ascribed in Europe to the Wehr Wolf.

The traveller Bruce furnishes the following description of one of these animals:—

"One night, being very busily engaged in my tent, I heard something pass behind me towards the bed, but, upon looking round, could perceive nothing. Having finished what I was about, I went out, resolving to return, which I did. I now perceived a pair of large blue eyes glaring at me in the dark. I called to my servant to bring a light; and there stood a hyæna, near the head of my bed, with two or three large bunches of candles in his mouth. As his mouth was full, I was not afraid of him; so, with my pike I struck him as near the heart as I could judge. It was not till then that he showed any signs of fierceness; but feeling his wound, he let the candles drop, and endeavored to climb up the handle of the spear to arrive at me; so that, in self-defence, I was obliged to draw a pistol from my girdle and shoot him: nearly at the same time my servant cleft his skull with a battle-axe.

"The hyæna appears to be senseless and stupid during the day. I have locked up with him a goat, a kid, and a lamb all day, when he was fasting, and found them in the evening alive and unhurt. Repeating the experiment one night, he ate up a young ass, a goat, and a fox, all before morning, so as to leave nothing but some small fragments of the ass's bones."

Sparrman furnishes us with the following story: "One night, at a feast near the Cape, a trumpeter, who had got himself well filled with liquor, was

carried out of doors in order to cool and sober himself. The scent of him soon attracted a spotted hyæna, which threw him on his back, and carried him away to Sable Mountain, thinking him a corpse, and consequently a fair prize. In the mean time our drunken musician awoke, sufficiently sensible to know the danger of his situation, and to sound his alarm with his trumpet, which he carried at his side. The beast, as it may be imagined, was greatly frightened in his turn, and immediately ran away."

PROTELES LALANDII.—But one species is known, the *Viverra hyænoidea*, a very singular animal from South Africa. Its form is that of a diminutive hyæna, with a small head, long legs, and a dog's nose. In its coloring it strongly resembles the Striped Hyæna. Little is known of it, but it is said to be destructive to young lambs, and is stated to attack the massive fatty protuberance on the tails of the African sheep.

Here terminates the great family of the Canidæ, or Dogs.

Notwithstanding the immense distance which, in character, disposition, and appearance, divides many of them, their family relationship is established by the fact that the union of any one of the species with another will produce offspring.

VIVERRIDÆ—THE CIVETS—

Have for characters three false molars above and four below, the anterior of which sometimes falls out. The tongue is covered with sharp and rough papillæ. Their claws are more or less raised as they walk, and near the anus is a pouch of considerable depth, which contains an unctuous and odorous substance, secreted by peculiar glands.

VIVERRA, OR TRUE CIVETS.—Four species are known, from Africa and India. They are described as beautifully spotted animals, larger than the common cat, having a mane like the hyænas, of indolent habits, feeding on fruits, easily tamed, and when enraged, raise the dorsal mane and hiss like cats. From them is derived that musky pomade which is well known as an article of commerce, and is much used as a perfume.

ZIBET (*V. zibetha*). (See Plate VI.)—The color of this animal is gray; legs transversely spotted with brown; head long; throat white, with two black bands on each side; no mane; tail with eight or ten half rings, black and white. It is a native of the great Indian islands, where it is kept in captivity for the sake of collecting the musky secretion.

GENETTA—The Genets. There are numerous species, inhabiting the same general locality as the preceding. One (*V. genetta*) is found

in the south of France. Their claws are retractile, like the cat's. In these species the pouch, with its peculiar secretion, nearly disappears, although there is a perceptible odor of musk.

CRYPTOPROCTA—The Galet. We know of but one species, *C. ferox*. Judging from its dentition, it must be the most carnivorous of the Viverines. It is a little longer than a stoat, of a brown color, and has large ears. Is a native of Madagascar.

PIONODON—The Delundung. The only species known, *P. gracilis*, is from Java; a rare animal, of slender form, very beautifully streaked and spotted.

PARADOXURUS—The Musangs. The musang possesses the teeth and most of the characters of the genets. Twelve or thirteen species are known, inhabiting India, the great Asiatic islands, and Africa. They are partly frugivorous, but when they seek other food they spring upon their prey from a place of ambush; are tamed with ease, and when angry growl and spit like cats. They climb with facility, and build their nests on the forked branches of trees. They sleep rolled up in a ball. In color they do not differ much from the genets. They are destructive to poultry and eggs.

CYNOGALE—The Cynogale. But one species is known, *C. Bennettii*. It is a native of Sumatra; has the ears small, the head and color very similar to the common otter. It is an aquatic animal.

MANGUSTA—The Mangustas. There are numerous species, of which the ichneumon (*V. ichneumon*, Linn.) is the best known. It is longer than the domestic cat, and very slender. It may be easily tamed. It is a native of Egypt, feeds on all sorts of small animals and the eggs of the crocodile. The opinion that it entered the mouth of this animal to destroy it, which obtained among the ancients, and continued to a late period, it is needless to say, was fabulous. The Indian species, *V. mungos*, attacks and destroys the most dangerous serpents. To it we are indebted for a knowledge of the *Ophiorhiza mungos* as an antidote to the venom of snakes.

RYZENA—The Surikate. Strongly resembles the foregoing. It differs from all the carnivora hitherto mentioned, save the Lycaon Pieta and Cynictis, by having only four toes to each foot. It is also higher upon the legs. One species only has been discovered, *V. tetradactyla*. It is smaller than the India mangust, and is a native of Africa. It exhales an odor pleasantly sour, from which circumstance it was called by the Dutch *Sure Kate*—Sour Cat.

CROSSARCHUS—The Mangue. With the snout, teeth, pouch, and gait of the surikate, it has the toes of the mangustas. There is but one species, *C. obscurus*, from Sierra Leone.

FELIDÆ — CATS.

Cuvier says, that of all the carnivorous animals the cats are the most completely and powerfully armed, and provided with weapons for seizing and overcoming their prey. They have six front teeth in each jaw, and also two canine teeth, very powerful, and formed for tearing; in the upper jaw four cheek or molar teeth, and in the under, three pointed, shaped like a wedge, and formed for cutting. Have the head large and round; eyes, with the pupil often oblong; tongue with strong horny papillæ directed backwards. They have four toes on the hind feet and five on the fore, armed with very strong, hooked, and sharp claws, which are retracted when the animals walk or are at rest. They seek living animals for food, never feeding on carrion unless severely pressed by hunger. They inhabit forests, or wooded rocks, where shelter can be obtained in the clefts. They are natives of Europe, Asia, Africa, and America; but the most powerful species are confined chiefly to the tropical regions.

The ancients appear to have had considerable knowledge of these species, especially the lions, tigers, and leopards, which were made to take part, as with the Romans, in their games, triumphs, and the cruel sports of the amphitheatre. Immense numbers of these animals were collected at Rome, and transported to all parts of the Roman empire; but by what means they could have been taken in such incredible numbers it is difficult to conjecture. Eutropius tells us that five thousand wild beasts were slaughtered at the dedication of the amphitheatre of Titus. It is said that at the opening of Pompey's theatre five hundred lions were slain in five days, and at a subsequent exhibition the entertainment consisted in the slaughter of one hundred lions, the same number of lionesses, two hundred leopards, and three hundred bears. It was thought in the highest degree honorable to engage in battle with these fierce beasts; and thus we find persons of the highest rank ambitious to enter the arena, and display their courage in such conflicts.

Animals in such enormous numbers could not have been furnished but by the employment of whole armies in their capture; and we find that even sovereigns went out to hunt them, with all the "pomp and circumstance of war," and with preparations as carefully considered as if they were about to make war upon some powerful nation. Claudian's description of the number and variety of wild beasts brought to Rome can scarcely be considered an exaggeration.

" All that with potent teeth command the plain,
All that run horrid with erected mane,
Or, proud of stately horns or bristling hair,
At once the forest's ornament or fear;
Torn from their deserts by the Roman power,
Nor strength can save, nor craggy den secure."

The cats are ranged under five genera. I. *Leo*—Lions of the Old World. II. *Puma*—Lions of the New World. III. *Felis*—Tigers, panthers, &c., common to both continents. IV. *Cynailurus*. V. *Lynxus*—Lynxes.

GENUS I. *Leo*—The Lion. Of all the beasts of prey, the lion is, by far, the most powerful. His admitted superiority of strength, together with the majesty of his demeanor, won for him, even at an early period, the title of "king of beasts." The color of these animals is uniformly tawny, but the tuft of hair which terminates the tail is black. The males are distinguished by a flowing mane, that clothes the neck, head, and shoulders. Formerly they inhabited Europe as well as Asia and Africa, but the barbarous customs to which we have just alluded must soon have effected their extermination in the former, and very much restricted them in the latter countries.

It is our purpose now to sketch, as briefly as possible, the principal points of interest in the character, history, and habits of these creatures, availing ourselves of the observations of travellers, and especially of those whose tastes have led them to seek the lion in his native haunts, and study him there.

THE AFRICAN LION (*Leo Africanus*).—In the burning regions of Africa the lion attains to his most perfect development in size, strength, and grandeur of appearance. In numberless deserts, untrodden by the foot of man, he rules with despotic power over all the rest of the animal world. No animal in those immense wilds is sufficiently powerful to withstand his attack, or fleet of foot to escape his pursuit. He lies in ambush by the streams where the feebler races come to drink, springs upon them unawares, and in a moment they are rent to pieces by his powerful fangs. When his roar resounds along the plains, all living things seem to be paralyzed by fear, and seek safety, as best they may, by flight, or concealing themselves in holes or the clefts of rocks among the hills. Of all the living world, man alone he fears, and by man alone has he ever been subdued.

Of the African Lion, there appear to be three varieties. Temminck recognizes two—that of Barbary and that of Senegal. The first of these has the hair of a deep yellowish-brown, the mane and hair upon the breast and insides of the fore legs thick and shaggy. In the second, the color is much paler, the mane much contracted, being less extensive on the shoulders, and almost entirely wanting upon the breast and insides of the legs. A third variety is marked by a black mane, inhabiting the southern portion of the African continent, and is considered by the natives as more daring, powerful, and fierce than the foregoing.

The Lion of Africa is, full grown, nearly eight feet in length, and five feet in height. The female is considerably less, and her form is much more

slender and graceful. She displays more agility in her motions, and is more impetuous in the exercise of the various passions. The female is also destitute of the mane and the long hair which adorns the other parts of the body of the male.

It was doubtless the black mane variety that Burchell met with in his travels, his dangerous encounter with which he thus relates:—

"The day was exceedingly pleasant, and not a cloud was to be seen. For a mile or two we travelled along the banks of the river, which in this part abounded in tall mat-rushes. The dogs seemed much to enjoy prowling about, and examining every bushy place, and at last met with some object among the rushes which caused them to set up a most vehement and determined barking. We explored the spot with caution, as we suspected, from the peculiar tone of their bark, that it was what it proved to be—lions. Having encouraged the dogs to drive them out,—a task which they performed with great willingness,—we had a full view of an enormous black-maned lion and lioness. The latter was seen only for a minute, as she made her escape up the river, under concealment of the rushes; but the lion came steadily forward, and stood still to look at us. At this moment we felt our situation not free from danger, as the animal seemed preparing to spring upon us, and we were standing on the bank at the distance of only a few yards from him, most of us being on foot and unarmed, without any visible possibility of escaping.

"I had given up my horse to the hunters, and was on foot myself; but there was no time for fear, and it was useless to attempt avoiding him. I stood well upon my guard, holding my pistols in my hand, with my finger upon the trigger, and those who had muskets kept themselves prepared in the same manner. But at this instant the dogs boldly flew in between us and the lion, and surrounding him, kept him at bay by their violent and resolute barking. The courage of these faithful animals was most admirable. They advanced up to the side of the huge beast, and stood making the greatest clamor in his face, without the least appearance of fear. The lion, conscious of his strength, remained unmoved at their noisy attempts, and kept his head turned towards us. At one moment the dogs, perceiving his eyes thus engaged, had advanced close to his feet, and seemed as if they would actually seize hold of him; but they paid dearly for their imprudence, for, without discomposing the majestic and steady attitude in which he stood fixed, he merely moved his paw, and in the next instant I beheld two lying dead. In doing this, he made so little exertion that it was scarcely perceptible by what means they had been killed. Of the time which we had gained by the interference of the dogs not a moment was lost. We fired upon him. One of the balls went through his side, just between

the short ribs, and the blood immediately began to flow; but the animal still remained standing in the same position. We had now no doubt that he would spring upon us; every gun was instantly reloaded; but happily we were mistaken, and were not sorry to see him move quietly away, though I had hoped in a few minutes to have been enabled to take hold of his paw without danger.

"This was considered by our party to be a lion of the largest size, and seemed, as I measured him by comparison with the dogs, to be, though less bulky, as heavy as an ox. He was certainly as long in body, though lower in stature; and his copious mane gave him a truly formidable appearance. He was of that variety which the Hottentots and boors distinguish by the name of the *black lion*, on account of the blacker color of the mane, and which is said to be larger and more dangerous than the other, which they call the *pale lion*. Of the courage of a lion I have no very high opinion, but of his majestic air and movements, as exhibited by this animal while at liberty in his native plains, I can bear testimony. Notwithstanding the pain of a wound, of which he must soon afterwards have died, he moved slowly away, with a stately and measured step."

It has been well remarked that, in the actions of all animals, the influence of hunger has a very powerful effect, and the attributes of cruelty which have generally been given to this race, have been called forth by their search after natural sustenance. In like manner are they endowed with cunning and daring; and we accordingly find animals of such size and bulk as the lion and tiger endowed with powers sufficient to overcome creatures both great and strong. When not pressed by the severe calls of hunger, the lion feeds chiefly at dawn and twilight, and is easily disturbed; he is, nevertheless, abroad during the whole night, and, prowling round the herds of animals, or near the flocks of the settlers, or caravans of travellers, watches an opportunity, and seizing upon some straggler, carries it to his place of repose, and devours it at leisure. But impelled by the cravings of hunger, which the scarcity of wild animals and the care of the colonists sometimes force him to endure, he becomes a very different animal; his cunning becomes daring—no barrier will withstand him; he rushes with resistless fury upon the object of his attack; a bullock is torn from the team, or a horse from the shafts; and even man dragged from the watch-fires, surrounded by his companions and powerful fire-arms.

Perseverance in watching, and in retaining his prey when seized, is another characteristic of the lion. An instance of the latter is related in the Journal of the Landdrost Jah. Sterneberg, kept in his journey to the Namaqua Hottentots. We have taken it from Phillips's "Researches in South Africa." "The wagons and cattle had been put up for the night, when,

about midnight, they got into complete confusion. About thirty paces from the tent stood a lion, which, on seeing us, walked very deliberately about thirty paces farther, behind a small thorn bush, carrying something with him which I took to be a young ox. We fired more than sixty shots at the bush. The south-east wind blew strong, the sky was clear, and the moon shone very bright, so that we could perceive anything at a short distance. After the cattle had been quieted again, and I had looked over everything, I missed the sentry from before the tent. We called as loudly as possible, but in vain. Nobody answered; from which I concluded he was carried off. Three or four men then advanced very cautiously to the bush, which stood right opposite the door of the tent, to see if they could discover anything of the man, but returned helter-skelter; for the lion, who was still there, rose up, and began to roar. About a hundred shots were again fired at the bush, without perceiving anything of him. This induced one of the men again to approach it with a firebrand in his hand; but as soon as he approached the bush the lion roared terribly, and leaped at him, on which he threw the firebrand at him, and the other people having fired about ten shots at him, he returned immediately to his former station.

"The firebrand which he had thrown at the lion had fallen in the midst of the bush, and, favored by the wind, began to burn with a great flame, so that we could see very clearly into it and through it. We continued our firing into it; the night passed away, and the day began to break, which animated every one to fire at the lion, because he could not lie there without exposing himself entirely. Seven men, posted at the farthest wagons, watched to take aim at him as he came out. At last, before it became quite light, he walked up the hill with the man in his mouth, when about forty shots were fired without hitting him."

The strength of these animals is almost incredible. One of them will seize an ox of the largest size, and drag him off without trouble; and Sparrman relates an instance of a lion at the Cape "seizing a heifer in his mouth, and, though the legs dragged upon the ground, he seemed to carry her off with as much ease as a cat does a rat. He also leaped over a broad dike with her without the least difficulty." Another traveller in South Africa — Thompson — relates a more remarkable instance of strength. "A lion, having carried off a heifer of two years old, was followed on the spoor or track for fully five hours, by a party on horseback, and throughout the whole distance the carcass of the heifer was only once or twice discovered to have touched the ground."

The favorite food of the lion appears to be deer, antelopes, and especially asses or horses. The lion's fondness for horse-flesh undoubtedly gave rise to the opinion that his favorite luxury was human prey, as he would attack

man almost invariably when travelling with horses; but it is proved that the horse is the object of his pursuit, not man.

Thompson relates an incident that seems to confirm this.

"Lucas Van Vunsen, a Vee boor, was riding across the open plains, near the Little Fish River, one morning about daybreak, and observing a lion at a distance, he endeavored to avoid him by making a wide circuit. There were thousands of springboks scattered over the extensive flats; but the lion, from the open nature of the country, had been unsuccessful in hunting. Lucas soon perceived that he was not disposed to let him pass without further parlay, and that he was rapidly approaching to the encounter; and, being without his rifle, and otherwise little inclined to any closer acquaintance, he turned off at right angles, laid the sjambok freely to his horse's flanks, and galloped for life. But it was too late. The horse was fagged, and bore a heavy man on his back. The lion was fresh, and furious with hunger, and came down upon him like a thunder-bolt. In a few seconds he overtook, and, springing up behind Lucas, brought horse and man in an instant to the ground. Luckily the poor boor was unhurt, and the lion was too eager in worrying the horse to pay any immediate attention to the rider. Hardly knowing how he escaped, he contrived to scramble out of the fray, and reached the nearest house in safety."

There are many other instances which sufficiently prove that the lion will not assail man as an object of food if he can procure anything else. Besides, he appears to have an instinctive dread of the human race; and far in the interior of Africa, where the people are ignorant of our powerful fire-arms, they attack this terrible creature without fear. Their mode of hunting him is thus described by Phillips, in his "Researches":—

"It has been remarked of the lion by the bushmen, that he generally kills and devours his prey in the morning or evening, at sunrise or sunset. On this account, when they intend to kill lions, they generally notice where the springboks are grazing at the rising of the sun; and by observing, at the same time, if they appear frightened and run off, they conclude that they have been attacked by the lion. Marking accurately the spot where the alarm took place, about eleven o'clock of the day, when the sun is powerful, and the enemy they seek is supposed to be fast asleep, they carefully examine the ground, and finding him in a state of unguarded security, they lodge a poisoned arrow in his breast. The moment the lion is thus struck he springs from his lair, loses all presence of mind, and bounds off like a stricken deer. The work is done. The arrow of death has pierced his heart, without even breaking the slumbers of the lioness which may have been lying beside him; and the bushman knows where, in the course of

a few hours, or even less, he will find him dead, or in the agonies of death."

Lion-hunting in Africa is not undertaken as a pastime or sport, but solely for the purpose of destroying the animal. Mr. Thompson, in his "Travels," has so graphically described one of these hunts, that we cannot resist the temptation to insert his account here.

"I was then residing on my farm, or location, at Bavion's River, in the neighborhood of which numerous herds of large game, and consequently beasts of prey, are abundant. One night a lion, who had previously purloined a few sheep out of the kraal, came down and killed my riding-horse, about a hundred yards from the door of my cabin. Knowing that the lion, when he does not carry off his prey, usually conceals himself in the vicinity, and is moreover very apt to be dangerous, by prowling about the place in search of more game, I resolved to have him destroyed or dislodged without delay. I therefore sent a messenger round the location to invite all, who were willing to assist in the foray, to repair to the place of rendezvous as speedily as possible. In an hour every man of the party (with the exception of two pluckless fellows, who were kept at home by the women) appeared, ready mounted and armed. We were also reënforced by about a dozen of the Bastaard Hottentots, who resided at that time upon our territory as tenants or herdsmen—an active and enterprising, though rather an unsteady race of men.

"The first point was to track the lion to his covert. This was effected by a few of the Hottentots on foot. Commencing from the spot where the horse was killed, we followed the spoor through grass, and gravel, and brushwood, with astonishing ease and dexterity, where an inexperienced eye could discern neither footprint nor trace of any kind, until, at length, we fairly tracked him into a large bosch, or straggling thicket of brushwood and evergreens, about a mile distant.

"The next object was to drive him out of his retreat, in order to attack him in a close phalanx, with more safety and effect. The approved mode in such cases is to torment him with dogs till he abandons his covert, and stands at bay in the open plain. The whole band of hunters then march forward together, and fire deliberately, one by one. If he does not speedily fall, but grows angry, and turns upon his enemies, they must stand close in a circle, and turn their horses' rear outward; some holding them fast by the bridles, while the others kneel to take a steady aim as he approaches, sometimes up to the very horses' heels, couching every now and then, as if to measure the distance and strength of his enemies. This is the moment to shoot him fairly in the forehead, or some other mortal part. If they continue to wound him ineffectually, till he waxes furious and desper-

ate, or if the horses, startled by his terrific roar, grow frantic with terror and burst loose, the business becomes rather serious, and may end in mischief, especially if all the party are not men of courage, coolness, and experience. The frontier boors are, however, generally such excellent marksmen, and withal so cool and deliberate, that they seldom fail to shoot him dead as soon as they get within a fair distance.

" In the present instance we did not manage matters quite so scientifically. The Bastaards, after recounting to us all these and other sage laws of lion-hunting, were themselves the first to depart from them. Finding that with the few indifferent hounds we had made little impression on the enemy, they divided themselves into two or three parties, and rode round the jungle, firing into the spot where the dogs were barking round him, but without effect. At length, after some hours spent in thus beating about the bush, the Scottish blood of some of my countrymen began to get impatient, and three of them announced their determination to break in, and beard the lion in his den, provided three of the Bastaards (who were superior marksmen) would support them, and follow up their fire should the enemy venture to give battle. Accordingly in they went, in spite of the warnings of some more prudent men, to within fifteen or twenty paces of the spot where the animal lay concealed. He was couched among the roots of a large evergreen, but with a small space of open ground on one side of it; and they fancied, on approaching, that they saw him distinctly lying, glaring at them, under the foliage. Charging the Bastaards to stand firm and level fair should they miss, the Scottish champions let fly together, and struck—not the lion, as it afterwards proved, but a great block of red stone, beyond which he was actually lying.

" Whether any of the shot grazed him is uncertain, but, with no other warning than a furious growl, forth he bolted from the bush. The rascally Bastaards, in place of pouring in their volley upon him, instantly turned and ran, helter-skelter, leaving him to do his pleasure upon the defenceless Scots, who, with empty guns, were tumbling over each other, in their hurry to escape the clutch of the rampant savage. In a twinkling he was upon them, and, with one stroke of his paw, dashed the nearest to the ground. The scene was terrific. There stood the lion, with his foot upon his prostrate foe, looking round in conscious pride upon the bands of his assailants, and with a port the most noble and imposing that can be conceived. It was the most magnificent thing I ever witnessed. The danger of our friends, however, rendered it at the moment too terrible to enjoy either the grand or the ludicrous part of the picture. We expected every instant to see one or more of them torn in pieces; nor, though the rest of the party were standing within fifty paces, with their guns cocked and levelled, durst we

fire for their assistance. One was lying under the lion's feet, and the others scrambling towards us in such a way as to intercept our aim upon him. All this passed far more rapidly than I have described it; but luckily the lion, after steadily surveying us for a few seconds, seemed willing to be quit on fair terms, and, with a fortunate forbearance, turned calmly away, and, driving the snarling dogs like rats from among his heels, bounded over the adjoining thicket like a cat over a footstool, clearing brakes and bushes twelve or fifteen feet high as readily as if they had been tufts of grass, and, abandoning the jungle, retreated towards the mountains.

"After ascertaining the state of our rescued comrade, who, fortunately, had sustained no other injury than a slight scratch on the back and a severe bruise on the ribs, from the force with which the animal had dashed him to the ground, we renewed the chase, with Hottentots and hounds in full cry. In a short time we again came up with the enemy, and found him standing at bay under an old mimosa-tree, by the side of a mountain stream; which we had distinguished by the name of Douglas Water. The dogs were barking round, but afraid to approach him, for he was now beginning to growl fiercely, and to brandish his tail in a manner that showed he was meditating mischief. The Hottentots, by taking a circuit between him and the mountain, crossed the stream, and took a position on the top of a precipice overlooking the spot where he stood. Another party occupied a position on the other side of the glen, and, placing the poor fellow thus between two fires, which confused his attention and prevented his retreat, we kept battering at him, without truce or mercy, till he fell, unable again to grapple with us, covered with wounds and glory."

There is a sculptured figure of a maneless lion on the hieroglyphic monuments of Upper Egypt. It appears that this species still exists. It is larger than any species hitherto known, and of a brown color.

It now remains to notice the remaining species,—if indeed it be a different species.

THE ASIATIC LION (*Leo Asiaticus*).—The editor of Bohn's edition of Cuvier evidently regards the lions of Africa and Asia as one species, although they exhibit some differences, as for instance, in their physiognomy. There is no difference of size or apparent strength. The most striking distinction is the pale tint, almost approaching fawn color, which pervades the whole body. The mane is something less than in the African species, but it is furnished, according to Mr. Bennet, with a peculiar appendage, in the long hairs, which, commencing beneath the neck, occupy the whole of the middle line of the body below.

The Asiatic lioness does not differ in color from the male, nor much from the African varieties found in Barbary and Senegal.

The lions of the Old World do not differ materially in their habits. Their breeding-places are generally selected in some deep cover, and all around is watched with such care that a transgression of the prescribed boundary would speedily call forth an attack. From two to four are produced at a litter; they are born with open eyes, but continue helpless for some weeks. During that period they are nursed with the utmost solicitude, and in some instances at least, the male also assists. (See Plate XII.)

It is one of the most signal proofs of the supernatural endowments of man, that he has been able to subdue this fierce and powerful beast, and even to win his attachment and affection. The complete docility of this animal in confinement most persons have had opportunities of observing in the numerous menageries which periodically visit all parts of the country.

While writing this article an open carriage passed under our own window, containing a large Asiatic lion, entirely unconfined, and a lady! He lay at her side with the utmost composure, evidently regarding her as his protector and friend, while he looked calmly on the crowd that gathered, naturally, to witness so novel a spectacle.

Sir William Jardine expresses the opinion that the lion is the most docile and tractable of all the Cats; the most capable of attachment, and the least variable in his moods. It is certain he may be trained to perfect obedience, and taught to perform wonderful things at exhibitions, which he does with considerable apparent enjoyment.

CHARACTERISTIC ANECDOTES OF THE LION.

A REFLECTING LION. — Some Hottentots once perceived a lion dragging a buffalo from the plain to a neighboring hill. They soon forced him to quit his prey, in order to secure it for themselves. They now found that the lion had had the sagacity to take out the inner parts of the buffalo, that were unfit for food, in order to make his load lighter, thus showing a degree of reflection.

A LION-ADVENTURE. — Diederik Muller, one of the most intrepid and successful lion-hunters in South Africa, gives the following incident. He had been out alone, hunting in the wilds, when he came suddenly upon a lion, which, instead of giving way, seemed disposed, from the angry attitude he assumed, to dispute with him the dominion of the desert. Diederik instantly alighted, and, confident of his unerring aim, levelled his mighty *roar* at the forehead of the lion, who was couched in the act to spring, within about fifteen paces of him; but, at the moment the hunter fired, his horse, whose bridle was round his arm, started back, and caused him to miss. The lion bounded forward, but stopped within a few paces, confronting Diederik, who stood defenceless, his gun discharged, and his horse running off. The

man and the beast stood looking each other in the face for a short space. At length the lion moved backward, as if to go away. Diederik began to load his gun: the lion looked over his shoulder, growled, and returned. Diederik stood still. The lion again moved cautiously off, and the boor proceeded to load and ram down his bullet. The lion again looked back, and growled angrily; and this occurred repeatedly, until the animal had got off to some distance, when he took fairly to his heels and bounded away. This was not the only nor the most dangerous adventure of Diederik Muller with the monarch of the wilderness. On another occasion a lion came so suddenly upon him that, before he could take aim, the animal made his formidable spring, and alighted so near the hunter that he had just space to thrust the muzzle of his gun into his open jaws, and shoot him through the head. Diederik and his brother Christian generally hunt in company, and have killed upwards of thirty lions. They have not achieved this, however, without many hair-breadth escapes, and have more than once saved each other's lives. On one of these occasions a lion sprang suddenly upon Diederik from behind a stone, bore man and horse to the ground, and was proceeding to finish his career, when Christian galloped up and shot the savage through the heart. In this encounter Diederik was so roughly handled that he lost his hearing in one ear, the lion having dug his talons deeply into it.

THE HOTTENTOT AND LION.—The hero of the following story is a Hottentot of the Agter Sneeuwberg. The man was out hunting, and perceiving an antelope feeding among some bushes, he approached in a creeping posture, and had rested his gun over an ant-hill to take a steady aim, when, observing that the creature's attention was suddenly and peculiarly excited by some object near him, he looked up, and perceived with horror that an enormous lion was at that instant creeping forward, and ready to spring upon himself. Before he could change his posture, and direct his aim upon his antagonist, the savage beast bounded forward, seized him with his talons, and crushed his left hand, as he endeavored to guard him off with it, between his monstrous jaws. In this extremity the Hottentot had the presence of mind to turn the muzzle of the gun, which he still held in his right hand, into the lion's mouth, and then, drawing the trigger, shot him dead through the brain. He lost his hand, but happily escaped without further injury.

THE LION'S TASTE FOR HOTTENTOTS.—A farmer, of the name of Van der Merwe, had outspanned his wagon in the wilderness, and laid himself down to repose by the side of it. His two Hottentot servants, a man and his wife, had disposed themselves on their ready couch of sand at the other side. At midnight, when all were fast asleep, a lion came quietly up, and

carried off the poor woman in his mouth. Her master and her husband, startled by her fearful shrieks, sprang to their guns, but without avail. Favored by the darkness, the monster had conveyed, in a few minutes, his unfortunate victim far into the thicket, beyond the possibility of rescue. A Hottentot, at Jackal's Fountain, on the skirts of the Great Karroo, had a narrow, though ludicrous escape, on a similar occasion. He was sleeping a few yards from his master, in the usual mode of his nation, wrapped up in his sheepskin *carrosse*, with his face to the ground. A lion came softly up, and seizing him by the thick folds of his greasy mantle, began to trot away with him, counting securely, no doubt, on a savory and satisfactory meal. But the Hottentot, on awaking, being quite unhurt, though sufficiently astonished, contrived somehow to wriggle himself out of his wrapper, and scrambled off, while the disappointed lion walked simply away with the empty integument. The last two anecdotes illustrate a peculiarity ascribed to the lion, namely, a supposed propensity to prey on black men in preference to white when he has the choice; or, as the Cape boors explain it, has discretion in refraining from the flesh of "*Christen mensch*," when "*Hottentot volk*" are to be come at. The fact of this preference, so strongly alleged, need not be disputed, but it may be accounted for on somewhat different grounds from those usually assigned. The lion, like most other beasts of prey, is directed to his game by the scent as well as by the eye. The peculiar odor of the Hottentot, especially in his wild and barbarous state, is exceedingly strong and pungent, and presents to the lion, who is prowling after nightfall in search of his supper, a fragrance fully as attractive as the scent of a savory beefsteak can be to a weary and hungry traveller.

THE LIONESS AND THE DOG.—A lioness in the Tower of London once formed such an attachment for a little dog, which was kept with her in the den, that she would not eat till the dog was first satisfied. After the lioness had become a mother, it was thought advisable to take the animal away, for fear that her jealous fondness for her whelps might lead her to injure it. But while the keeper was cleaning the den, the dog, by some means, got into it, and approached the lioness with his wonted fondness. She was playing with her cubs, and, seeing the dog, she sprang upon him, seizing him by the throat, and seemed in the act of tearing him to pieces; but, suddenly recollecting her former affection for him, she carried him to the door of the den, and suffered him to be taken out unhurt.

THE LION AND HIS PET.—A little dog was once thrown into the den of a lion in the Tower-menagerie, for the purpose of seeing the manner in which this animal springs upon his prey. The poor little animal skulked, in terror, to the remotest corner of the cage; but the lion, more merciful than man, refused to harm him, and regarded him with the greatest com-

placency. The little trembler, seeing the lion's mildness, ventured to approach him; and soon becoming familiar, they lived together thenceforward in the most perfect harmony; and, although the dog had sometimes the temerity to dispute his share of food with the lion, the latter magnanimously allowed him to satisfy his appetite before he thought of making a meal himself.

THE KNIGHT AND THE LION. — We cannot vouch for the truth of the following, although so far as the degree of affection manifested by the lion is concerned, there is nothing improbable in it. We select it from Goodrich's "Anecdotes of the Animal Kingdom," but know not its author.

Sir Geoffrey de la Tour, one of the knights that went upon the first crusade to the Holy Land, heard one day, as he rode through a forest, a cry of distress. Hoping to rescue some unfortunate sufferer, the knight rode boldly into the thicket; but what was his astonishment, when he beheld a large lion, with a large serpent coiled round his body! With a single stroke of his sword, and regardless of the consequences to himself, he killed the serpent, and extricated the tremendous animal from his perilous situation.

From that hour the grateful creature constantly accompanied his deliverer, whom he followed like a dog, and never displayed his natural ferocity but at his command. At length, the crusade being terminated, Sir Geoffrey prepared to return to Europe. He wished to take the lion with him, but the master of the ship in which he was to sail was unwilling to admit him on board, and the knight was therefore obliged to leave him on shore. The lion, when he saw himself separated from his beloved master, expressed his grief with a frightful roar; and when the ship moved off, he plunged into the waves, and continued to swim after the ship, until, his strength being exhausted, he sank beneath the billows, a martyr to his fidelity and affection.

A TERRIBLE VISITANT. — Professor Lichtenstein relates, — "When passing near the Riet River-gate, and while our oxen were grazing, Van Wyk, the colonist, related to us the following interesting circumstance. 'It is now,' he said, 'more than two years since, in the very place where we stand, I ventured to take one of the most daring shots that ever was hazarded. My wife was sitting within the house, near the door, the children were playing about her, and I was without, near the house, busied in doing something to a wagon, when suddenly, though it was midday, an enormous lion appeared, came up and laid himself quietly down in the shade, upon the very threshold of the door. My wife, either frozen with fear, or aware of the danger attending any attempt to fly, remained motionless in her place, while the children took refuge in her lap. The cry they uttered

attracted my attention, and I hastened towards the door; but my astonishment may well be conceived, when I found the entrance to it barred in such a way. Although the animal had not seen me, unarmed as I was, escape seemed impossible; yet I glided gently, scarcely knowing what I meant to do, to the side of the house, up to the window of my chamber, where I knew my loaded gun was standing. By a most happy chance I had set it into the corner close by the window, so that I could reach it with my hand, for, as you may perceive, the opening was too small to admit of my having got in; and, still more fortunately, the door of the room was open, so that I could see the whole danger of the scene. The lion was beginning to move, perhaps with the intention of making a spring. There was no longer any time to think: I called softly to the mother not to be alarmed, and, invoking the name of the Lord, fired my piece. The ball passed directly over the hair of my boy's head, and lodged in the forehead of the lion, immediately above his eyes, which shot forth, as it were, sparks of fire, and stretched him on the ground, so that he never stirred more. Indeed we all shuddered as we listened to this relation. Never, as he himself observed, was a more daring attempt hazarded. Had he failed in his aim, mother and children were inevitably lost; if the boy had moved, he had been struck; the least turn in the lion, and the shot had not been mortal to him. To have taken an aim at him without, was impossible; while the shadow of any one advancing, in the bright sun, would have betrayed him; to consummate the whole, the head of the creature was in some sort protected by the door-post."

THE PERFORMING LION.—We have seen recently a performing lion, which exhibited great intelligence, and went through his parts in a very graceful manner. The lion alluded to, after being pulled about, and made to show his teeth, &c., was required to exhibit. Two young men, in fancy dresses, entered the spacious cage, and in the mean time the lion, apparently aware of what he had to do, walked composedly round. He was now made to jump over a rope, held at different heights; next through a hoop and a barrel, and again through the same covered with paper. All this he did freely, compressing himself to go through the narrow space, and alighting gracefully. His next feat was to repeat the leaps through the hoop and barrel with the paper set on fire. This he evidently disliked, but with some coaxing went through each. The animals were now all fed, but the lion had not yet completed his share in the night's entertainment, and was required to show his forbearance by parting with his food. The keeper entered the cage and took it repeatedly from him, no further resistance than a short clutch and growl was expressed; his countenance had, however, lost its serenity, and how long his good temper would have continued is

doubtful. We did not previously believe that any of the *Felinæ* could have been so far tampered with.

RESPECT FOR HIS KEEPER. — A keeper of wild beasts at New York had provided himself, on the approach of winter, with a fur cap. The novelty of this costume attracted the notice of the lion, which, making a sudden grapple, tore the cap off his head as he passed the cage; but, perceiving that the keeper was the person whose head he had thus uncovered, he immediately laid it down. The same animal once hearing some noise under its cage, passed its paw through the bar, and actually hauled up the keeper, who was cleaning beneath; but as soon as he perceived that he had thus ill used his master, he instantly lay down upon his back, in an attitude of complete submission.

DIED OF GRIEF. — Some years since there was, in a menagerie at Cassel, in Germany, a large lion, whose keeper was a woman, to whom the animal seemed most affectionately attached. In order to amuse the company, this woman was in the habit of putting her hands, and even her head, into the lion's mouth, without experiencing the least injury. Upon one occasion, however, having introduced her head, as usual, between the animal's jaws, he made a sudden snap, and killed her on the spot. Undoubtedly this catastrophe was unintentional on the part of the lion; probably the woman's hair irritated his throat, so as to make him sneeze or cough. This supposition is confirmed by the subsequent conduct of the animal; for, as soon as he perceived that he had killed his attendant, the good-tempered, grateful creature exhibited signs of the deepest melancholy, laid himself down by the side of the dead body, which he would not suffer to be removed, refused to take any food, and, in a few days, pined himself to death.

AN INSTANCE OF DOCILITY. — A remarkable instance of docility in a lion once took place in the menagerie at Chester, in England. A strange keeper having fed a magnificent lion one evening, neglected to fasten the door of his den. The watchman, when going his rounds about three the next morning, discovered the king of beasts deliberately walking about the yard, and surveying the objects with apparent curiosity. The watchman went to call the proprietors, and when they arrived they found the lion couching upon the top of one of the coaches in the yard. With very little entreaty the monarch of the forest deigned to descend from his throne, and very graciously followed a young lady, the proprietor's daughter, back to his den.

THE PUMA, OR AMERICAN LION (*Felis concolor*). (See Plate XIII. Cougar.) — Why the Puma, and allied species, should be called lions, it is difficult to conceive, as they certainly show very little resemblance to the

true lions of Asia and Africa. This animal inhabits both North and South America, although in the North, owing to the advance of civilization, its range has been very much restricted. The puma is about the size of a leopard, of a grayish-red color, and has a tail from two to two and a half feet long, with a small black tuft at the end. The nose, chin, throat, and insides of the legs, are grayish-white, and the breast is almost pure white. When very young, the animal is marked with three chains of blackish-brown spots on the back, besides markings on other parts of the body; these, however, all disappear at maturity.

It climbs trees with great facility, and often watches for its prey in the branches, whence it darts down on sheep, deer, or whatever animals that chance to pass beneath.

Although so well provided for a forest life, the puma is often found on the open plains, and is frequently taken with the lasso. This is, indeed, the common method of hunting him. He is driven from cover by the dogs, who pursue him until he turns to defend himself. If the dogs fly upon him, the guacho jumps off his horse, and strikes him on the head with balls, to which an extraordinary momentum can be given. We learn from Captain Head, in his "Rough Notes," that if the dogs are at bay, and afraid to attack the foe, guacho then hurls his lasso over his head, and galloping away, drags him along the ground, while the hounds rush upon him and tear him.

The puma has all the fierceness, if not the daring, of his congeners in the Old World, as the following incident will show:—

Two hunters went out in quest of game on the Catskill Mountains, in the State of New York, each armed with a gun, and accompanied by his dogs. It was agreed between them that they should go in contrary directions round the base of the hill, and that if either discharged his piece the other should cross the hill as expeditiously as possible, to join his companion in pursuit of the game shot at. Shortly after separating, one heard the other fire, and, agreeably to their compact, hastened to his comrade. After searching for him some time without effect, he found his dog dead and dreadfully torn. Apprised by this discovery that the animal shot at was large and ferocious, he became anxious for the fate of his friend, and assiduously continued the search for him, when his eyes were suddenly directed, by the deep growl of a puma, to the large branch of a tree, where he saw the animal couching on the body of a man, and directing his eyes towards him, apparently hesitating whether to descend and make a fresh attack on the survivor, or to relinquish its prey and take to flight. Conscious that much depended on celerity, the hunter discharged his piece, and wounded the animal mortally, when it and the man fell from the body of the tree. The surviving dog

then flew at the prostrate beast; but a single blow from his paw laid him dead by his side. In this state of things, finding that his comrade was dead, and that there was still danger in approaching the wounded animal, he retired, and with all haste brought several persons to the spot where the unfortunate hunter and both the dogs were lying dead together.

In the southern and western portions of North America the puma dwells in swamps and upon the prairies, subsisting chiefly on deer, but sometimes robbing the farmer of his hogs, and not unfrequently making sad havoc among his sheep. This animal is not satisfied with killing one beast, and satiating his appetite with the flesh, but he will kill as many as he can, and suck their blood. On this account he is hunted like the lion in Africa, by a mingled band of squatters' dogs and horses.

HUNTING THE PUMA. — As we have given a description of a lion-hunt in Africa, we will insert here an interesting account of the manner in which the American lion is hunted. It is from the pen of Audubon.

"The hunters accordingly made their appearance just as the sun was emerging from beneath the horizon. They were five in number, and fully equipped for the chase, being mounted on horses, which, in some parts of Europe, might appear sorry nags, but which, in strength, speed, and bottom, are better fitted for pursuing a cougar or a bear through woods and morasses than any in that country. A pack of large, ugly curs were already engaged in making acquaintance with those of the squatter. He and myself mounted his two best horses, whilst his sons were bestriding others of inferior quality. Few words were uttered by the party until we had reached the edge of the swamp, where it was agreed that all should disperse, and seek for the fresh track of the painter, it being previously settled that the discoverer should blow his horn, and remain on the spot until the rest should join him. In less than an hour the sound of the horn was clearly heard, and, sticking close to the squatter, off we went through the thick woods, guided only by the now and then repeated call of the distant huntsman. We soon reached the spot, and in a short time the rest of the party came up. The best dog was sent forward to track the cougar, and in a few minutes the whole pack were observed diligently trailing, and bearing in their course for the interior of the swamp. The rifles were immediately put in trim, and the party followed the dogs, at separate distances, but in sight of each other, determined to shoot at no other game than the panther.

"The dogs soon began to mouth, and suddenly quickened their pace. My companion concluded that the beast was on the ground, and, putting our horses to a gentle gallop, we followed the curs, guided by their voices. The noise of the dogs increased, when, all of a sudden, their mode of barking became altered, and the squatter, urging me to push on, told me that

the beast was treed; by which he meant, that it had got upon some low branch of a large tree to rest for a few moments, and that should we not succeed in shooting him when thus situated, we might expect a long chase of it. As we approached the spot, we all, by degrees, united into a body; but on seeing the dogs at the foot of a large tree, separated again, and galloped off to surround it.

" Each hunter now moved with caution, holding his gun ready, and allowing his bridle to dangle on the neck of his horse, as it advanced slowly towards the dogs. A shot from one of the party was heard, on which the cougar was seen to leap to the ground, and bound off with such velocity as to show that he was very unwilling to stand our fire longer. The dogs set off in pursuit with great eagerness and a deafening cry. The hunter who had fired came up, and said that his ball had hit the monster, and had probably broken one of his fore legs, near the shoulder,—the only place at which he could aim. A slight trail of blood was discovered on the ground, but the curs proceeded at such a rate that we merely noticed this, and put spurs to our horses, which galloped on towards the centre of the swamp. One bayou was crossed, then another still larger and more muddy, but the dogs were brushing forward, and as the horses began to pant at a furious rate, we judged it expedient to leave them, and advance on foot. These determined hunters knew that the cougar, being wounded, would shortly ascend another tree, where in all probability he would remain for a considerable time, and that it would be easy to follow the track of the dogs. We dismounted, took off the saddles and bridles, set the bells attached to the horses' necks at liberty to jingle, hopped the animals, and left them to shift for themselves.

" After marching for a couple of hours we again heard the dogs. Each of us pressed forward, elated at the thought of terminating the career of the cougar. Some of the dogs were heard whining, although the greater number barked vehemently. We felt assured that the cougar was treed, and that he would rest for some time to recover from his fatigue. As we came up to the dogs, we discovered the ferocious animal lying across a large branch, close to the trunk of a cotton-wood tree. His broad breast lay towards us; his eyes were at one time bent on us, and again on the dogs beneath and around him; one of his fore legs hung loosely by his side, and he lay couched, with his ears lowered close to his head, as if he thought he might remain undiscovered. Three balls were fired at him, at a given signal, on which he sprang a few feet from the branch, and tumbled headlong to the ground. Attacked on all sides by the enraged curs, the infuriated cougar fought with desperate valor; but the squatter, advancing in front of the party, and almost in the midst of the dogs, shot him immediately behind

and beneath the left shoulder. The cougar writhed for a moment in agony, and in another lay dead."

It is said the puma may be tamed without difficulty, and is susceptible of attachment and affection. Mr. Wilson says it rejoices greatly in the society of those to whose company it is accustomed, lies down upon its back between their feet, and plays with the skirts of their garments, entirely after the manner of a kitten. It shows a great predilection for water, and frequently jumps into and out of a large tub, rolling itself about, and seemingly greatly pleased with the refreshment. While in London, it made its escape into the street during the night, but allowed itself to be taken up by a watchman, without offering even a show of resistance. It was brought from the city of St. Paul's, the capital of the district of that name, in the Brazilian empire. During the voyage it was in habits of intimacy with several dogs and monkeys, none of which it ever attempted to injure, nor did it even attempt to return the petty insults which the latter sometimes offered; but if an unfortunate fowl or goat came within its reach, it was immediately snapped up and slain.

There are three other species allied to the foregoing,—the Black Puma (*Felis nigra*), an extremely ferocious animal, entirely black, with pale, greenish-blue eyes; in length, about thirty-three and a half inches, exclusive of the tail, which is thirteen: the Yaguarundi (*F. jaguarondi*) is a native of Paraguay and Guiana, from three to four feet four inches in length; color, a deep gray. It frequents the borders of woods and thickets, is a ready and agile climber, and feeds on birds and small animals: the Eyra of Azara (*F. eyra*), is a small species, not exceeding twenty inches in length, of a reddish brown color, excepting the under jaw and a small spot on each side of the nose, which are white. Very little appears to be known of the habits and dispositions of these animals, although it is said that the black puma is easily tamed.

THE TIGER (*Felis tigrinus*). (See Plate XII.)—This animal is as large as the lion, but has a longer body and rounder head. There is but one species, confined exclusively to Asia. Its color is a bright reddish-buff' above, with irregular black transverse stripes, and pure white underneath. It is a most cruel and treacherous beast, and the scourge of the country it inhabits. Its strength, says Cuvier, is so great, and its movements so rapid, that, during the march of an army, it has been known to seize a soldier on horseback, and bear him off to the jungle, without affording a chance of rescue.

The tiger abounds in nearly all the warmer regions of Asia; but the great nursing-places of these animals,—their cradle, as Temminck terms it,—is the peninsula of Hindostan, the vast jungles of this rich country lining

the courses of her majestic rivers harbor thousands of them; for water is almost as indispensable for their nourishment as food.

The tiger is a nocturnal animal, lying during the day in the deepest shade of the forest, and hunting his prey at dawn, generally at the springs and drinking-places of the rivers, where various animals must come to drink, and from which he selects his morning repast. His strength is so great no animal but the elephant can withstand him. The following instance of his remarkable power is related. A buffalo, belonging to a peasant in the East Indies, having fallen into a quagmire, the man was himself unable to extricate it, and went to call the assistance of his neighbors. Meanwhile a large tiger coming to the spot, seized upon the buffalo and dragged him out. When the men came to the place, they saw the tiger, with the buffalo thrown over his shoulder, in the act of retiring with him towards the jungle. No sooner, however, did he observe the man than he let fall the dead animal, and precipitately escaped. On coming up, they found the buffalo quite dead, and his whole blood sucked out. Some idea may be gained of the immense power of the tiger, when it is mentioned that the ordinary weight of a buffalo is above a thousand pounds, and consequently considerably more than double its own weight.

“Here couched the panting tiger, on the watch;
Impatient, but unmoved, his fire-ball eyes
Made horrid twilight in the sunless wood,
Till on the heedless buffalo he sprang,
Dragged the low-bellowing monster to his lair;
Crashed through his ribs at once into his heart;
Quaffed the hot blood, and gorged the quivering flesh,
Till dumb he lay, as powerless as the carcass.”

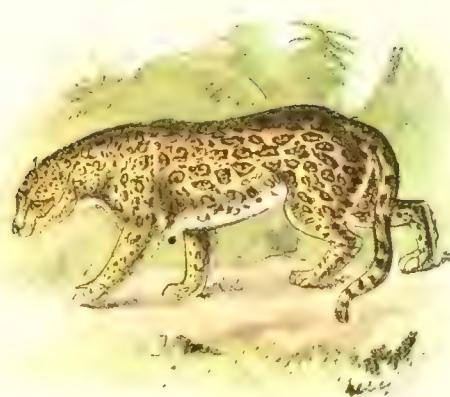
The destructive habits of tigers are so marked, and their depredations so extensive, that every possible means is adopted to insure their destruction, and much ingenuity is manifested by the natives in effecting this end.

METHODS OF DESTROYING TIGERS.—Among these inventions, and the most successful, is that of shooting them with a poisoned arrow, from a bow, placed so as to be disengaged by the animal passing. The bow is made of split bamboo, from six to eight feet in length, and at the middle from nine to ten inches in girth. The string is of strong catgut, and often half an inch in circumference. The bow is fixed with great nicety at the middle by two stakes, distant enough to allow the arrow to pass freely without touching, and placed at a distance from the ground, in proportion to the size of the animal to be killed. The string is drawn back and fastened by a wedge, to which a cord is attached, and strained moderately tight to a stake on the opposite side of the path to be traversed by the animal. The tiger generally falls within two hundred yards of the fatal shot, being fre-

MAMMALIA.



FELIS TIGRIS
(The Tiger.)



FELIS ONCA
(The Jaguar.)



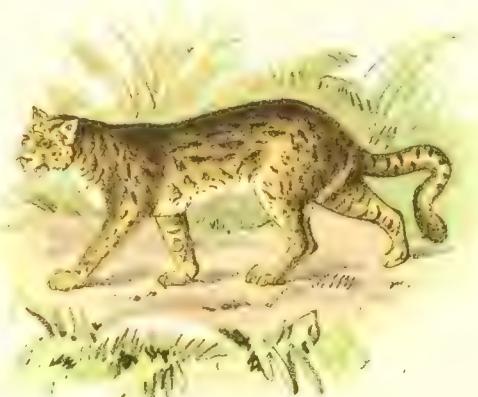
FELIS LEO
(Lioness & Cubs)



FELIS LEO
(The Lion.)



FELIS LYNX.
(The European Lynx.)



FELIS SUMATRANA
(Sumatran Cat.)

quently struck through the lungs, and often through the heart, and the poison, if less mortally wounded, seldom fails to kill within the hour.

A heavy beam is also sometimes suspended over the path, to which a cord is attached, which is in like manner disengaged, and the animal is crushed beneath the wood. Another method, said to be common in Persia, is mentioned in the "Oriental Field Sports." "This device consists of a large spherical cage, made of strong bamboos, or other efficient materials, woven together, but leaving intervals throughout, of about three or four inches broad. Under this cover, which is fastened to the ground by means of pickets, in some place where tigers abound, a man provided with two or three short, strong spears, takes post at night. Being accompanied by a dog, which gives the alarm, or by a goat, which, by its agitation, answers the same purpose, the adventurer wraps himself up in his quilt, and very composedly goes to sleep, in full confidence of his safety. When a tiger comes, and perhaps after smelling all around, begins to rear against the cage, the man stabs him with one of his spears through the interstices of the wicker-work, and rarely fails of destroying the tiger, which is ordinarily found dead at no great distance in the morning."

But the most curious and amusing of all is the following: "The track of a tiger being ascertained, which, though not invariably the same, may yet be known sufficiently for the purpose, the peasants collect a quantity of the leaves of the prous, which are like those of the sycamore, and are common in most underwoods, as they form the largest portion in jungles in the north of India. These leaves are smeared with a species of bird-lime, made by bruising the berries of an indigenous tree by no means scarce. They are then strewed with the gluten uppermost, near to that opaque spot to which it is understood the tiger usually resorts during the noontide heat. If by chance the animal should tread on one of the smeared leaves, his fate may be considered as decided. He commences by shaking his paw, with the view to remove the adhesive incumbrance, but finding no relief from that expedient, he rubs the nuisance against his jaw, with the same intention, by which means his eyes, ears, &c., become agglutinated, and occasion such uneasiness as causes him to roll, perhaps, among many more of the smeared leaves, till at length he becomes completely enveloped, and is deprived of sight, and in this situation he may be compared to a man who has been tarred and feathered. The anxiety produced by this strange and novel predicament soon discovers itself in dreadful howlings, which serve to call the watchful peasants, who in this state find no difficulty in shooting the object of their detestation."

HUNTING THE TIGER IN INDIA. — Expeditions against the tiger are frequently arranged on a very extensive scale; sometimes, indeed, a hundred

elephants are engaged in them. The courage, sagacity, coolness, and especially the great strength of the elephant, make him a powerful auxiliar in this perilous amusement. Captain Munday has given a fine account of one of these hunts in his "Sketches."

We found immense quantities of game,—wild-hogs, hog-deer, and the neil-ghie (literally, *blue-cow*). We, however, strictly abstained from firing, reserving our whole battery for the nobler game, the tiger. It was, perhaps, fortunate that we did not find one in the thick part of the forest, as the trees were so close set, and so interwoven with thorns and parasitic plants, that the elephants were often obliged to clear for themselves a passage by their own pressing exertions. It is curious on these occasions to see the enormous trees these animals will overthrow. On a word from the mahout, they place their foreheads against the obnoxious plants, twisting their trunks round it, and gradually bending it towards the ground, until they can place a foot upon it. This done, down comes the tree, with crashing stem and upturned roots. The elephant must be well educated to accomplish this duty in a gentleman-like manner; that is, without roaring sulkily, or shaking his master by too violent exertions. "On clearing the wood, we entered an open space of marshy grass, not three feet high. A large herd of cattle were feeding there, and the herdsman was sitting singing under a bush, when, just as the former began to move before us, up sprang the very tiger to whom our visit was intended, and cantered off across a bare plain, dotted with small patches of bush-jungle. He took to the open country, in a style which would have more become a fox than a tiger, who is expected by his pursuers to fight and not to run; and as he was flushed on the flank of the line, only one bullet was fired at him ere he cleared the thick grass. He was unhurt, and we pursued him at full speed. Twice he threw us out by stopping short in small stripes of jungle, and then heading back after we had passed; and he had given us a very fast trot of about two miles, when Colonel Arnold, who led the field, at last reached him by a capital shot, his elephant being in full career. As soon as he felt himself wounded, the tiger crept into a close thicket of trees and bushes, and crouched. The two leading sportsmen overran the spot where he lay; and as I came up, I saw him, through an aperture, rising to attempt a charge. My mahout had just before, in the heat of the chase, dropped his ankors or goad, which I had refused to allow him to recover; and the elephant, being notoriously savage, and further irritated by the goading he had undergone, became consequently unmanageable. He appeared to see the tiger as soon as myself, and I had only time to fire one shot, when he suddenly rushed with the greatest fury into the thicket, and falling upon his knees, nailed the tiger with his tusks to the ground. Such was the

violence of the shock, that my servant, who sat behind, was thrown out, and one of my guns went overboard. The struggles of my elephant to crush his still resisting foe, who had fixed one paw on his eye, were so energetic, that I was obliged to hold on with all my strength, to keep myself in the houdah. The second barrel, too, of the gun which I still retained in my hand, went off in the scuffle, the ball passing close to the mahout's ear, whose situation, poor fellow, was anything but enviable. As soon as my elephant was prevailed upon to leave the killing part of the business to the sportsmen, they gave the roughly used tiger the *coup de grace*. It was a very fine female, with the most beautiful skin I ever saw."

The animated description given below is from the pen of a lady who participated in the adventure. "We had elephants, guns, balls, and all other necessaries prepared, and about seven in the morning we set off. The soil was exactly like that we had gone over last night: our course lay northwest. The jungle was generally composed of corinda bushes, which were stunted and thin, and looked like ragged thorn bushes; nothing could be more desolate in appearance; it seemed as if we had got to the farthest limits of cultivation or the haunts of man. At times the greener bunches of jungle, the usual abodes of the beasts of prey during the daytime, and the few huts scattered here and there, which could hardly be called villages, seemed like islands in the desert waste around us. We stopped near two or three of these green tufts, which generally surrounded a lodgment of water, or little ponds, in the midst of the sand.

"The way in which these ferocious animals are traced out is very curious, and, if related in England, would scarcely be credited. A number of unarmed, half naked villagers go prying from side to side of the bush, just as a boy in England would look after a stray sheep, or peep after a bird's nest. Where the jungle was too thick for them to see through, the elephants, putting their trunks down into the bush, forced their way through, tearing up every thing by the roots before them. About four miles from our tents we were all surrounding a bush, which might be some fifty yards in circumference (all includes William Frazer, alone, upon his great elephant, Mr. Barton and myself upon another equally large, Mr. Wilder upon another, and eight other elephants; horsemen at a distance, and footmen peeping into the bushes). Our different elephants were each endeavoring to force his way through, when a great elephant, without a houdah on his back, called 'Muckna,' a fine and much-esteemed kind of elephant (a male without large teeth), put up, from near the centre of the bush, a royal tiger. In an instant Frazer called out, 'Now, Lady H., be calm, be steady, and take a good aim: here he is!' I confess, at the moment of

thus suddenly coming upon our precious victim, my heart beat very high, and, for a second, I wished myself far enough off; but curiosity, and the eagerness of the chase, put fear out of my head in a minute. The tiger made a charge at the Muckna, and then ran back into the jungle. Mr. Wilder then put his elephant in, and drove him out at the opposite side. He charged over the plain away from us, and Wilder fired two balls at him, but knew not whether they took effect. The bush in which he was found was one on the west bank of one of those little half dry ponds of which I have spoken. Mr. Barton and I conjecturing that, as there was no other thick cover near, he would probably soon return, took our stand in the centre of the open space. In a minute the tiger ran into the bushes on the east side. I saw him quite plain. We immediately put our elephant into the bushes, and poked about, till the horsemen, who were reconnoitring round the outside of the whole jungle, saw him slink under the bushes to the north side. Hither we followed him, and from thence traced him, by his growling, back to the outer part of the eastern bushes. Here he started out just before the trunk of our elephant, with a tremendous growl or grunt, and made a charge at another elephant farther out on the plain, retreating again immediately under cover. Frazer fired at him, but we suppose without effect; and he called to us for our elephant to pursue him into his cover.

"With some difficulty we made our way to the inside of the southern bushes; and, as we were looking through the thicket, we perceived beau tiger slink away under them. Mr. Barton fired, and hit him a mortal blow about the shoulder or back, for he instantly was checked, and my ball, which followed the same instant, threw him down. We two then discharged our whole artillery, which originally consisted of two double-barrelled guns, loaded with slugs, and a pair of pistols. Most of them took effect, as we could discover by his wincing, for he was not above ten yards from us at any time, and at one moment, when the elephant chose to take fright and turn his head round, away from the beast, running his haunches almost into the bush, not five. By this time William Frazer had come round, and discharged a few balls at the tiger, which lay looking at us, grinning and growling, his ears thrown back, but unable to stir. A pistol fired by me shattered his lower jaw-bone; and immediately, as danger of approaching him was now over, one of the villagers, with a match-lock, went close to him, and applying the muzzle of his piece to the nape of his neck, shot him dead, and put him out of his pain. The people then dragged him out, and we dismounted to look at him, pierc'd through and through; yet one could not contemplate him without satisfaction, as we were told that he had long infested the high road, and carried off many passengers.

One hears of the roar of a tiger, and fancies it like that of a bull, but in fact it is more like the grunt of a hog, though twenty times louder, and certainly one of the most tremendous animal noises one can imagine."

AFFECTION FOR THEIR YOUNG. — Although the tigress sometimes destroys her young ones, she generally shows much anxiety for them. Two cubs were once discovered by some villagers, in India, while their mother was in quest of prey, and presented by them to a gentleman, who had them put in his stable. The creatures made piteous moanings every night, which at last reached the ears of the mother. She came to the spot, and answered their cries by hideous howlings, which so alarmed their keeper that he let the cubs loose, for fear the dam would break the door of the stable. Nothing was seen of them the next morning: the tigress had carried them both off into the jungle.

THEIR ATTACHMENT. — This animal is susceptible of strong attachments. An instance of this is recorded of a tigress of great beauty in the Tower at London. She was extremely docile in her passage home from Calcutta; was allowed to run about the vessel, and became exceedingly familiar with the sailors. On her arrival in London, however, her temper became irascible, and even dangerous, and she exhibited for some days a savage and sulky disposition.

Shortly after, a sailor, who had had charge of her on board the ship, came to the Tower, and begged permission to enter her den. No sooner did she recognize her old friend, than she fawned upon him, licked and caressed him, exhibiting the most extravagant signs of pleasure; and, when he left her, she whined and cried the whole day afterwards. In time, however, she became reconciled to her new keeper and residence.

EFFECT OF A PIECE OF MEAT. — The effect of feeding the tiger upon raw flesh, is shown by the following anecdote: A party of gentlemen from Bombay found one day, in a cavern, a tiger's whelp, which was hidden in an obscure corner. Snatching it up hastily, they cautiously retreated. Being left entirely at liberty, and well fed, the tiger became tame, like the dog, grew rapidly, and appeared entirely domesticated. At length it attained a great size, and began to inspire terror by its tremendous strength and power, notwithstanding its gentleness. Up to this moment it had been studiously kept from raw meat. But, unfortunately, during its rambles a piece of flesh dripping with blood fell in its way. The instant it had tasted it, something like madness seemed to seize the animal; a destructive principle, hitherto dormant, was kindled: it darted fiercely, and with glowing eyes, upon its prey; tore it, with fury, to pieces, and, growling and roaring in the most frightful manner, rushed off, and disappeared in the jungle!

THEIR CUNNING.—Tigers are sometimes very cunning. One of them was kept at a French factory, at Silseeri, which was secured by a strong chain. This animal used to scatter a portion of the rice that was set before him as far round the front of his den as possible. This enticed the poultry to come and pick it up. The tiger pretended to be asleep, in order to induce them to approach nearer, when he suddenly sprang upon them, and seldom failed to make several of them his prey.

HOW THEY SEIZE THEIR PREY.—Some years ago a tame tiger was led about Madras by some of the natives, without any other restraint than a muzzle, and a small chain round his neck. The men lived by exhibiting, to the curious, the tiger's method of seizing his prey. The manner in which they showed this was by fastening a sheep to a stake driven into the earth. The tiger was no sooner brought in sight of it than he crouched, and moved along the ground on his belly, slowly and cautiously, till he came within the limits of a bound, when he sprang upon the sheep with the rapidity of an arrow, and struck it dead in an instant.

THE PANTHER (*Felis pardus*).—Cuvier says of this animal, that it is spread widely over Africa, the hottest regions of Asia, and also of the Indian Archipelago. In color, it is yellowish above and white beneath, with six or seven rows of black spots in the form of roses; that is to say, formed by a collection of small single spots on each side. The tail is as long as the rest of the animal, less the head. (See Plate XIII.)

The panther has all the ferocity, but not the strength, of the tiger. It is about five feet and four inches in length, including the tail. The species appears to be considerably varied, as Cuvier speaks of having seen a black panther. These animals affect the deep recesses of forests more than the tigers; and they subsist on antelopes, deer, wild fowl, horses, and even monkeys. They possess great activity, and climb trees with surprising facility, where they often take refuge when hunted, and where also they seek monkeys for food. There appears to be a mortal antipathy between the panther and all the monkey-like animals; and when the former makes a spring among them, the monkey community is the scene of wild commotion, and, as they flee before their terrible enemy, swinging themselves from branch to branch, the forest resounds with their fearful cries.

Ferocious as this animal is, it appears that it is more easily tamed than any others of the large Feline. There is an extraordinary instance described by Mrs. Bowditch, who relates it in such elegant language that we know not how to pass it by. Addressing the editor of Loudon's Magazine of Natural History, she says,—

"I am induced to send you some account of a panther which was in my possession for several months. He and another were found, when very

young, in the forest, apparently deserted by their mother. They were taken to the king of Ashantee, in whose palace they lived several weeks; when my hero, being much larger than his companion, suffocated him in a fit of romping, and was then sent to Mr. Hutchison, the resident left by Mr. Bowditch at Coomassie. This gentleman, observing that the animal was very docile, took pains to tame him, and, in a great measure, succeeded. When he was about a year old, Mr. Hutchison returned to Cape Coast, and had him led through the country by a chain, occasionally letting him loose when eating was going forward, when he would sit by his master's side, and receive his share with comparative gentleness. Once or twice he purloined a fowl, but easily gave it up to Mr. Hutchison, on being allowed a portion of something else. On the day of his arrival he was placed in a small court, leading to the private rooms of the governor, and, after dinner, was led by a thin cord into the room, where he received our salutations with some degree of roughness, but with perfect good humor. On the least encouragement he laid his paws upon our shoulders, rubbed his head upon us, and his teeth and claws having been filed, there was no danger of tearing our clothes. He was kept in the above court for a week or two, and evinced no ferocity, except when one of the servants tried to pull his food from him; he then caught the offender by the leg, and tore out a small piece of flesh, but he never seemed to owe him any ill will afterwards. He one morning broke his cord, and, the cry being given, the castle gates were shut, and a chase commenced. After leading his pursuers two or three times around the ramparts, and knocking over a few children by bouncing against them, he suffered himself to be caught and led quietly back to his quarters, under one of the guns of the fortress. By degrees the fear of him subsided; and orders having been given to the sentinels to prevent his escape through the gates, he was left at liberty to go where he pleased, and a boy was appointed to prevent him from intruding into the apartments of the officers. His keeper, however, generally passed his watch in sleeping; and Sai, as the panther was called, after the royal giver, roamed at large. On one occasion he found the servant sitting on the steps of the door, upright, but fast asleep; when he lifted his paw, gave him a blow on the side of his head, which laid him flat, and then stood wagging his tail, as if enjoying the mischief he had committed. He became exceedingly attached to the governor, and followed him everywhere like a dog. His favorite station was at a window of the sitting-room, which overlooked the whole town; there, standing on his hind legs, his fore paws resting on the ledge of the window, and his chin laid between them, he appeared to amuse himself with what was passing beneath. The children also stood with him at the window. One day, finding his presence an incumbrance, and that they

could not get their chairs close, they used their united efforts to pull him down by the tail. He one morning missed the governor, who was settling a dispute in the hall, and who, being surrounded by black people, was hidden from the view of his favorite. Sai wandered with a dejected look to various parts of the fortress in search of him; and, while absent on this errand, the audience ceased, the governor returned to his private rooms, and seated himself at a table to write. Presently he heard a heavy step coming up the stairs, and, raising his eyes to the open door, he beheld Sai. At that moment he gave himself up for lost; for Sai immediately sprang from the door on his neck. Instead, however, of devouring him, he laid his head close to the governor's, rubbed his cheek upon his shoulder, wagged his tail, and tried to evince his happiness. Occasionally, however, the panther caused a little alarm to the other inmates of the castle, and the poor woman who swept the floors, or, to speak technically, pra-pra woman, was made ill by her fright. She was one day sweeping the boards of the great hall with a short broom, and in an attitude nearly approaching to all-fours, and Sai, who was hidden under one of the sofas, suddenly leaped upon her back, where he stood in triumph. She screamed so violently as to summon the other servants; but they, seeing the panther, as they thought, in the act of swallowing her, one and all scampered off as quickly as possible; nor was she released till the governor, who heard the noise, came to her assistance. Strangers were naturally uncomfortable when they saw so powerful a beast at perfect liberty, and many were the ridiculous scenes which took place; they not liking to own their alarm, yet perfectly unable to retain their composure in his presence.

"This interesting animal was well fed twice every day, but never given anything with life in it. He stood about two feet high, and was of a dark yellow color, thickly spotted with black rosettes; and, from the good feeding, and the care taken to clean him, his skin shone like silk. The expression of his countenance was very animated and good-tempered, and he was particularly gentle to children. He would lie down on the mats by their side when they slept, and even the infant shared his caresses, and remained unhurt. During the period of his residence at Cape Coast, I was much occupied with making arrangements for my departure from Africa, but generally visited my future companion every day; and we, in consequence, became great friends before we sailed. He was conveyed on board the vessel in a large wooden cage, thickly barred in the front with iron. Even this confinement was not deemed a sufficient protection by the canoe men, who were so alarmed at taking him from the shore to the vessel that, in their confusion, they dropped cage and all into the sea. For a few minutes I gave up my poor panther as lost, but some sailors jumped into a boat

belonging to the vessel and dragged him out in safety. The beast himself seemed completely subdued by his ducking; and as no one dared to open his cage to dry it, he rolled himself up in one corner, nor roused himself till after an interval of some days, when he recognized my voice. When I first spoke, he raised his head, held it on one side, then on the other, to listen; and when I came fully into his view, he jumped on his legs, and appeared frantic; he rolled himself over and over, he howled, he opened his enormous jaws, and cried, and seemed as if he would have torn his cage to pieces. However, as his violence subsided, he contented himself with thrusting his paws and nose through the bars of the cage to receive my caresses.

"The greatest treat I could bestow upon my favorite was lavender-water. Mr. Hutchison had told me that on the way from Ashantee he drew a scented handkerchief from his pocket, which was immediately seized on by the panther, who reduced it to atoms; nor could he venture to open a bottle of perfume when the animal was near, he was so eager to enjoy it. I indulged him twice a week, by making a cup of stiff paper, pouring a little lavender-water into it, and giving it to him through the bars of his cage. He would drag it to him with great eagerness, roll himself over it, nor rest till the smell had evaporated. By this I taught him to put out his paws without showing his nails, always refusing the lavender-water till he had drawn them back again; and in a short time he never, on any occasion, protruded his claws when offering me his paw. We lay eight weeks in the River Gaboon, where he had plenty of excellent food, but was never suffered to leave his cage, on account of the deck being always filled with black strangers, to whom he had a very decided aversion, although he was perfectly reconciled to white people. His indignation, however, was constantly excited by the pigs, when they were suffered to run past his cage, and the sight of one of the monkeys put him in a complete fury. While at anchor in the before-mentioned river, an ourang-outang (*Simia saigrus*) was brought for sale, and lived three days on board; and I shall never forget the uncontrollable rage of the one, or the agony of the other, at this meeting. The ourang-outang was about three feet high, and very powerful in proportion to his size; so that when he fled with extraordinary rapidity from the panther to the farther end of the deck, neither men nor things remained upright when they opposed his progress. There he took refuge in a sail, and although generally obedient to the voice of his master, force was necessary to make him quit the shelter of its folds. As to the panther, his back rose in an arch; his tail was elevated, and perfectly stiff; his eyes flashed, and, as he howled, he showed his huge teeth; then, as if forgetting the bars before him, he tried to spring on the ourang-outang, to tear him to

atoms. It was long before he recovered his tranquillity; day and night he appeared to be on the listen; and the approach of a large monkey we had on board, or the intrusion of a black man, brought a return of his agitation. We at length sailed for England, with an ample supply of provisions; but, unhappily we were boarded by pirates during the voyage, and nearly reduced to a state of starvation. My panther must have perished but for a collection of more than three hundred parrots, with which we sailed from the river, and which died very fast while we were in the north-west trades. Sai's allowance was one per diem; but this was so scanty a pittance that he became ravenous, and had no patience to pick off the feathers before he commenced his meal. The consequence was that he became very ill, and refused even this small quantity of food. Those around him tried to persuade me that he suffered from the colder climate; but his dry nose and paw convinced me he was feverish, and I had him taken from his cage, when, instead of jumping about and enjoying his liberty, he lay down, and rested his head upon my feet. I then made three pills, each containing two grains of calomel. The boy who had charge of him, and who was much attached to him, held his jaws open while I pushed the medicine down his throat. Early the next morning I went to visit my patient, and found his guard sleeping in his cage; and having administered a further dose to the invalid, I had the satisfaction of seeing him perfectly cured in the evening. On the arrival of the vessel in the London docks, Sai was taken ashore, and presented to the Duchess of York, who placed him in Exeter Change, to be taken care of till she herself went to Oatlands. He remained there for some weeks, and was suffered to roam the greater part of the day without any restraint. On the morning previous to the Duchess's departure from the town she went to visit her new pet, played with him, and admired his healthy appearance and gentle deportment.

"In the evening, when her Royal Highness's coachman went to take him away, he was dead, in consequence of an inflammation on his lungs!"

THE LEOPARD (*Pelis leopardus*). (See Plate XIII.)—Cuvier briefly describes the leopard thus: "Semblable à la panthere, mais avec rangées des taches plus petites," i. e., like the panther, but with rows of smaller spots. It is considerably smaller than the jaguar, but is an animal of great strength and activity, and, at the same time, is remarkable for the gracefulness of its movements. Few beasts can exceed the leopard in the general harmony of his proportions, the easy elegance of his walk, or the beautiful markings of his skin. He is, nevertheless, a most furious animal, and man even does not always come off victorious in a conflict with him. He is captured by means of various kinds of traps; but, as his destruction is desired rather than his captivity, he is hunted with dogs, which pursue him

until he takes refuge in a tree, where he is easily shot. Hunting the leopard, however, is not without its perils, and the least imprudence on the part of the hunter may lead to fatal results, as the following incident shows: "Two African farmers, returning from hunting the hartebeest (*Antilope bubalis*), roused a leopard in a mountain ravine, and immediately gave chase to him. The leopard at first endeavored to escape, by clambering up a precipice; but being hotly pressed, and wounded by a musket-ball, he turned upon his pursuers with that frantic ferocity peculiar to this animal on such emergencies, and springing on the man who had fired at him, tore him from his horse to the ground, biting him at the same time on the shoulder, and tearing one of his cheeks severely with his claws. The other hunter, seeing the danger of his comrade, sprang from his horse, and attempted to shoot the leopard through the head; but, whether owing to trepidation, or the fear of wounding his friend, or the quick motions of the animal, he unfortunately missed. The leopard, abandoning his prostrate enemy, darted with redoubled fury upon his second antagonist, and so fierce and sudden was his onset, that before the boor could stab him with his hunting-knife, the savage beast struck him on the head with his claws, and actually tore the scalp over his eyes. In this frightful condition the hunter grappled with the leopard; and, struggling for life, they rolled together down a steep declivity. All this passed far more rapidly than it can be described in words. Before the man who had been first attacked could start to his feet and seize his gun, they were rolling, one over the other, down the bank. In a minute or two he had reloaded his gun, and rushed forward to save the life of his friend. But it was too late. The leopard had seized the unfortunate man by the throat, and mangled him so dreadfully that death was inevitable; and his comrade (himself severely wounded) had only the melancholy satisfaction of completing the destruction of the savage beast, already exhausted with the loss of blood from several deep wounds by the desperate knife of the expiring huntsman."

The leopard, however, is not incapable of some degree of training; but we do not know of any instance of attachment equal to what we have witnessed in the lion, tiger, or panther. Mr. Bennet describes a pair of leopards which were placed in the Tower Menagerie, London, in 1829. Their activity was extraordinary, and their motions, when sporting in their cage, were executed with extreme grace and elegance. Their food was generally tossed up in front of the den, at a distance of nearly two feet from the bars, and to the height of nearly eight feet from the floor. The animals, upon the alert for their dinner, would leap immediately towards the bars, and darting out their paws with incredible swiftness, almost uniformly succeeded in seizing it before it fell to the ground.

The following account has reference to the same: "There is a pair of leopards, from Asia, at the present time in the Tower, confined in the same den. The female is very tame, and gentle in her temper, and will allow herself to be patted and caressed by the keepers, while she licks their hands, and purs. She, however, has one peculiarity,—that she cannot bear many of the appendages that visitors bring with them to the menagerie. She has a particular predilection for the destruction of parasols, umbrellas, muffs, and hats, which she frequently lays hold of before the unwary spectator can prevent it, and tears to pieces in an instant. She has been five years in the Tower, during which time she has seized and destroyed several hundreds of these articles, as well as other parts of ladies' dress. While this creature is in a playful mood, she bounds about her cell with the quickness of thought, touching the four sides of it nearly at one and the same instant. So rapid are her motions, that she can scarcely be followed by the eye; and she will even skim along the ceiling of her apartment with the same amazing rapidity, evincing great pliability of form, and wonderful muscular powers."

THE RIMAU-DAHAN (*Felis macrocclis*). Tree Tiger.—This animal is a native of Sumatra; is about five feet and six inches in length, including the tail, and one foot and four inches in height. The head is proportionally small, somewhat attenuated, obtuse, and rather high in its vertical dimensions. The upper lip is full and distended, the lower lip is less swelled and projecting than in several other species of this genus. The termination of the muzzle is abrupt. The general aspect indicates less ferocity than that of the tiger or leopard; the character of the eyes and the physiognomy have considerable resemblance to those of the domestic cat.

The color of the tree tiger is a whitish-gray; the whole body, however, is singularly marked by large, irregular, angular dark spots, some of them of a deep velvet-black.

It is an inoffensive animal, and seems to regard men and children, not as enemies, but as friends and companions. It lives much on trees, where it also sleeps, whence it derives the name *Dahan*, which signifies the fork formed by the branch of a tree, across which it is said to rest, and occasionally stretch itself.

In confinement it is extremely docile and playful. A pair of them, carried a few years ago from Sumatra to England, excited a great degree of interest among the passengers on the ship which transported them. They were as playful as kittens; always courting intercourse with persons passing by, and, in the expression of their countenance, which was always open and smiling, showed the greatest delight when noticed, throwing themselves on their backs, and delighting to be tickled and rubbed. There was a little

dog on board ship, which was a great favorite with them, always treating him with marked kindness and tenderness. When one of them was fed with a fowl which had died, he seized it, and, after tearing it a little, and sucking the blood, amused himself for hours in throwing it about and jumping after it, as a cat plays with a mouse before it is quite dead.

THE JAGUAR (*Felis onca*). (See Plate XIII.) — The jaguar, or American panther, as he is sometimes called, is, next to the tiger, the strongest and most terrible of the Feline family. He is beautifully spotted with rings more or less complete, and containing smaller spots on a deeper ground tint. The general color is yellowish, and the markings are of a deep chocolate-brown. He is a native of South America, but although found from Patagonia to the Isthmus of Darien, he is most abundant in Paraguay and Brazil.

He is a ferocious and destructive beast, inhabits the forests, and seeks his prey by watching, or by openly seizing cattle or horses in the enclosures. His depredations among the herds of horses which graze on the prairies of Paraguay are vast and terrible. Swift as lightning he darts upon his prey, overthrows him by weight, or breaks his neck by a blow of his paw, or by a sudden wrench of the nose, at which practice the jaguar shows an extraordinary skill and singular intelligence. His strength is so great, he can easily drag off a full-sized horse. D'Azara, the traveller and naturalist, relates that he caused the body of a horse, which had just fallen a victim to this animal, to be drawn within musket-shot of a tree in which he intended to pass the night, anticipating that the jaguar would return in the course of it to his victim; but, while he was gone to prepare for the adventure, the animal returned from the opposite side of a large and deep river, and, seizing the horse with his teeth, drew it for about sixty paces to the water, swam across with his prey, and then drew it into a neighboring wood, in sight, the whole time, of a person whom D'Azara had left concealed to observe what might happen before his return.

His food, however, is very various, and sometimes, it is said, he feeds on fish, and will even go into the water to catch them,—which instinct has been observed often in the common cat.

He is an expert climber, and Sonnini tells us that he has seen the print of the jaguar's claws on the bark at the top of a tree fifty feet in height and without branches. He sometimes feeds on monkeys, but they are generally too active for him; having the power to swing themselves from branch to branch with wonderful swiftness, they are soon beyond his reach. After horses, oxen and sheep are his favorite prey, and his devastations among them are often very extensive. On account of this, efforts are constantly made to destroy him. He is hunted with dogs, which run him to bay, or

force him to seek safety in a tree, where he is kept till the approach of the hunters, who shoot him, or disable him with their long spears.

Immense numbers of them are killed every year; two thousand are annually exported from Buenos Ayres alone.

The jaguar exhibits, in some things, a large degree of sagacity. His manner of catching turtles would almost seem to be the result of both reason and experience, for he secures them precisely as their human hunters do. He goes to the beach, and, surprising the turtles on the sand, suddenly and skilfully turns them up on the back, in which situation they are entirely helpless and immovable. Men take them by the same mode. This act seems so entirely the sequence of some process of reasoning, or the result of an intelligent observation of the habits and powers of the turtle, that we should hesitate to believe the account, were it not reported by Humboldt, who often witnessed the operation himself.

The jaguar is equally skilful in extracting the meat from the shell. How he does it, is not explained; but, by using his claws in some unknown manner, he succeeds in drawing out the entire body of the turtle as clean as if the adhering muscles had been cut by a surgeon's knife, and without, in the least degree, breaking or separating the shell.

This animal does not appear inclined to attack man, unless in self-defence; but, as if some peculiar instinct, similar to that of the dog, led him to desire human society, he will follow a traveller for miles, skirting the road, and appearing only at intervals among the bushes; and as he never attempts to molest him, he must be attracted to man by some unexplained sympathy.

Sometimes, even in his wild state, he seems to be seized with playful fits. Humboldt furnishes us with an instance. "Two Indian children, a girl and boy, the one about seven, the other about nine years old, were at play on the outskirts of a village, when a large jaguar, about two o'clock in the afternoon, came out of the woods and made towards them, playfully bounding along, his head down, and his back arched, in the manner of a cat. He approached the boy in this way, and began to play with him; nor was he even sensible of any danger, until the jaguar, not intending harm, probably, but in sport, struck him so hard as to draw blood, whereupon the little girl, with a small switch which she held in her hand, struck him, when, not at all irritated, he bounded away, in the same playful manner, to his retreat in the forest."

This incident also proves the existence of a latent sympathy, which leads certain animals to desire the friendship, protection, and caresses of man, and which exhibits itself, sometimes, in their wildest state.

THE OUNCE (*Felis uncia*). (See Plate XII.)—The ounce is a mountain cat, marked by long, shaggy hair. The tail is longer than the

body, which is as large as that of the leopard, and similarly spotted, but more obscurely, and on a paler ground tint. It inhabits the mountains of Asia. The history of this animal is involved in some obscurity, and of its habits and nature little or nothing is known.

THE CHATI (*Felis mitis*).—We have here a beautiful and interesting species, also from South America, which is about one third larger than the domestic cat. The upper parts of the body are of a pale yellowish tinge; the lower parts are pure white. The whole body is covered with irregular dark patches; those upon the back are entirely black, and disposed longitudinally in four rows; those upon the sides are surrounded with black, having the centres of a clear fawn-color, and are arranged in five rows. The limbs are marked in a similar manner, but with smaller spots: In its formation and motions it is said to resemble the common cat; it also utters a similar cry, only that it is harsher and more prolonged. It further resembles the domestic animal in the mildness of its disposition,—whence its systematic name, *Mitis*, i. e., mild,—and its desire to be caressed.

THE HUNTING-LEOPARD (*Felis jubata*).—This cat, called the chetah, is one of the most remarkable specimens of the genus. It is a native of Asia and Africa, but the animals of the two continents exhibit considerable variety, and perhaps are, as Cuvier suggests, specifically different. The head is rounder and shorter than in the foregoing species, and the claws are not entirely retractile. It is about the size of the leopard, but the body is longer; of a pale yellowish color, marked with smaller black spots, disposed in rows. The limbs also show the same markings; a black streak reaches from the eye to the angle of the mouth, and the end of the tail is ringed. The most striking peculiarity of the species is, that it obviously unites the characters of the cat and dog. Its entire formation is that of the cat, with the exception of its claws, which, being only partially retractile, and not protected by a sheath, become blunted by contact with the ground when walking, like those of the dog, and consequently cannot be used as weapons of offence for tearing and cutting. This modification leads to a corresponding one in the nature, habits, disposition, and moral character of the beast. Thus, with the agility of the cat, the chetah has the docility, and, in a degree, the sagacity of the dog. He is susceptible of education and affection, and may be domesticated so as to live at large with children and other animals.

This animal has been employed for hunting from a very early period, and is still extensively used in India for the same purpose. He is tame and gentle as a greyhound, and, like him, is led about in a leash. When he hunts, however, he rides on the back of an elephant, or on horseback, behind his master. A gentleman who participated in one of these hunting expeditions, thus describes it:—

"Just before we reached our ground, it was reported that a herd of antelopes was feeding about half a mile out of the line of march, and the chetahs being at hand, we decided to go in pursuit of them. The leopards, at this time, were each accommodated with a flat-topped cart, without sides, drawn by two bullocks, and each animal had two attendants. They were loosely bound by a collar and rope to the back of the vehicle, and also held by the keeper by a strap round the loins. A hood of leather covered the eyes. The antelopes, being exceedingly timid and wild, the best way to enjoy the sport, is to sit on the cart alongside of the driver; for the vehicle being built like the hacheries of the peasants, to the sight of which the deer are accustomed, it is not difficult to approach within two hundred yards of the game. On emerging from a cotton-field, we came in sight of four antelopes, and my driver managed to get within a hundred yards of them ere they took the alarm. The chetah was quickly unhooded, and loosed from his bonds; and as soon as he viewed the deer, he dropped quietly off the cart, on the *opposite* side to that on which they stood, and advanced towards them at a slow, crouching canter, masking himself by every bush and inequality which lay in his way. As soon, however, as they began to show alarm, he quickened his pace, and was in the midst of them in a few bounds. He singled out a doe, and ran it close for about two hundred yards, when he reached it with a blow of his paw, rolled it over, and, in an instant, was sucking its blood at its throat. One of the other chetahs was slipped at the same time, but after making four or five desperate bounds, by which he nearly reached his prey, suddenly gave up the pursuit, and came growling sulkily back to his cart.

"As soon as the deer is pulled down, a keeper runs up, hoods the chetah, cuts the victim's throat, and securing some of the blood in a wooden ladle, thrusts it under the leopard's nose. The antelope is then dragged away, and placed in a receptacle under the hachery, while the chetah is rewarded with a leg for his pains."

THE OCELOT (*Felis pardalis*).—The ocelot is a South American species, of an extremely interesting character. It is twice the size of the domestic cat, of a pale yellowish color, marked with longitudinal brown and black spots. There appear to be four or five varieties, distinguished by different markings, and slight differences of shade in the ground-color.

This cat is a nimble climber, and ascends trees with facility in search of prey, which consists of birds and small animals. It is easily tamed, and, in a state of domestication, becomes very playful. Its temper, however, cannot be relied on. A gentleman in France tamed one of these animals, which, for three years, enjoyed the range of his house and garden the same as a domestic cat. One evening, however, at the fireside, when a child of

three years was playing with it, as it had often done before, the ocelot, being irritated, seized the infant by the throat, and killed it, before assistance could be rendered.

Mr. Wilson furnishes an account of this animal, from which we learn many particulars regarding its habits and capacity for domestication. "She is remarkably playful, much inclined to climb up the legs of those who approach her, and delights in being carried about in people's arms like a cat. She is an extremely powerful animal, but gentle through the influence of domestication, and attached to those who feed her. One day she seized a glove of chamois leather, which she tore to pieces and swallowed immediately. The person to whom the glove belonged could not rescue it with the strength of both his hands. While young, this animal was fed on oatmeal porridge and milk, and has been all along sustained chiefly by milk and vegetables, with occasionally a bit of broiled liver or other offal. The nature of the diet has obviously a considerable influence on her disposition. When farinaceous food and milk prevail, she is certainly more tractable than when animal food is given in any considerable quantity; and when treated with live birds or raw flesh, she is observed to assume greater fierceness of aspect, and to strike more forcibly with her fore paws at passing animals. She has sometimes made her escape from confinement, and exhibited a power of climbing trees with great activity and ease. She has occasionally committed considerable havoc in the poultry-yard, and has more than once greatly alarmed a horse by jumping on his back in the stable. In this last feat, however, the ocelot seemed to be actuated rather by a desire for society than the love of mischief, for she coiled herself up on the hind quarter, evidently for the purpose of repose; but the plunging of the horse induced her to use her claws to render her seat more secure. Upon this, the steed, as might be expected, redoubled his exertions to dislodge his supposed enemy, and the ocelot was at last thrown, receiving in her descent a kick, which she never afterwards forgot; for it has since been observed that, on seeing a horse, she immediately betakes herself to her den. A house-dog and the ocelot speedily acquired a knowledge of each other's powers, and neither seemed disposed to court an attack. A few days before her departure to London from Liverpool, she occasioned a serious alarm. Being secured, by a long chain, in front of a cottage door, she suddenly threw down a young girl of four years old, and, to the horror of the beholders, appeared to seize the child by the throat. This, however, was intended merely as play, for neither her sharp teeth nor crooked talons inflicted the slightest injury; and after tumbling over each other more than once, the child was taken up severely frightened, but no way hurt."

The linked ocelot (*Felis catus*), and the long-tailed ocelot (*Felis ma-*

erourus), are varieties of the foregoing species, and distinguished by similar habits.

THE MARGAY (*Felis tigrina*).—A small and beautiful species, also from South America. The fur is of a pale fawn color, white on the lower parts. The head and neck are adorned with black longitudinal bands, narrow and distinct upon the crown, and becoming broad upon the neck. On the whole, it resembles the ocelots, from which, however, it may readily be distinguished by its smaller size and the comparative shortness of the tail.

SUMATRAN CAT (*Felis minuta*).—The length of this animal is about two feet, including the tail, which is eight inches. The height is between eight and nine inches. The ground color of the upper parts is a reddish-gray, passing gradually to a pure white on the under parts of the body.

It is a most ferocious little animal, and all efforts to tame it have invariably proved unavailing. It inhabits the islands of Java and Sumatra, where it dwells in the forests, concealing itself during the day in hollow trees. At night it wanders in search of food, and sometimes enters the villages on the skirts of the forests and plunders the hen-roosts. It is said that it imitates the voices of fowls, in order to approach them unsuspected.

Following the above are the Bengal cat (*F. Bengalensis*), of a tawny-yellow above, white beneath. Diard's cat (*F. Diardii*), yellowish-gray, an inhabitant of Java; Nepaul cat (*F. Nepalensis*), tawny-gray, nearly white below: inhabits Nepaul. The Serval (*F. Serval*), upper parts ochrey-yellow, deepest upon the back, and shading into pure white underneath: native of Africa; Himalayan Serval (*F. Hyrcanum*), upper parts dull, rich brown, paler as it reaches the lower third of the body, and changing into white on the breast and belly: from India; Servaline cat (*F. Servalina*), very pale tawny: also from India; the Colocolo (*F. Colocolo*), whitish-gray: inhabits South America; and common wild cat (*F. Catus*), fur long and thick, ground color varying from a yellowish-gray to a blackish-gray. The series of cats is terminated by an interesting species, which serves to connect the foregoing with our domestic cats.

Like the dog, the domestic cat has, through unknown generations, been the companion of civilized man, sharing his roof, and courting his friendship and caresses; repaying his protection by hunting and destroying the rats, mice, and other animals which at times become so annoying. The cat is more extensively diffused than the dog; for while but few people, comparatively, keep the latter, nearly every house has its cat. Whatever, therefore, will throw light on the history of this useful animal, can scarcely fail to excite a lively interest in all classes of people.

The Egyptian cat (*Felis manulata*) is a native of North Africa, and was first described in the Zoölogical Atlas of the German naturalist Rup-

pel, who says that it is as large as a middle-sized domestic cat, and smaller than the European wild cat, by one third. All the proportions of its limbs are on a smaller scale, corresponding with those of the latter, with the exception of the tail, which, in this smaller species, is found to be longer. The woolly or ground hair is in general of a dirty ochre color, which on the back and posterior parts assumes a darker hue, and gradually becomes lighter on the anterior and lateral parts; its bristles are of a swarthy dirty white color, and wrinkled, thus giving the animal the appearance of a grayish-yellow hue. The skin of the labial edges and of the nose is bare, and of a black color. The beard and bristles of the eyebrows are of a shining white; the edges of the eyelids are black; the iris is of a glaring yellow. Mr. Ruppel mentions a considerable number of other markings, which, however, are not of sufficient importance to be enumerated here. He found this cat in Nubia, west of the Nile, near Ambunol. Its natural abode is rocky and bushy regions.

The superintendent of the Frankfort Zoölogical Collection, referring to the discovery of Ruppel, remarks, that the Egyptian cat "must, in more than one respect, excite the interest of natural philosophers, as there can be no doubt but that from it is descended the domestic species of the ancient Egyptians. It is a well-known fact, that this nation had brought up the cat to be a domestic animal, as is abundantly proved by the cat-mummies, and their representations on the monuments of Thebes." By a comparison of the domestic cat of Egypt, as represented by the cat-mummies and sculptures, with the present *Felis maniculata*, it appears they are identical.

We think there can be no question that this cat is the type of our domestic species, and that to the Egyptians we are indebted for it. Introduced into Europe, there would, undoubtedly, be occasional crossings with small native species of wild cats, producing, at length, new species; and these, still further intermingling, would produce in the end those great varieties which we have to-day.

The common cat, like all other animals in a domestic state, is subject to an almost endless difference of color and markings. The most remarkable varieties, perhaps, are the Chartreuse cat, of a bluish gray color; the Persian cat, with long white or gray hair; and the Angora cat, of a brownish-white color, and with remarkably long, silky hair. It is kept as a drawing-room pet, but is of no great utility. But the Spanish, or tortoise-shell cat, as it is generally called, is by far the most pleasing and beautiful variety of this animal. It is often kept for its beauty, and was once in great demand among cat-fanciers.

The domestic cat is capable of great attachment to, and long recollection of, those who have been kind to it. On this point, we find the following

judicious remarks, in a note on page 84 of Bohn's edition of Cuvier's *Animal Kingdom*: "The domestic cat is undoubtedly more susceptible of attachment than it has been generally described; and it is surprising to see how patiently it bears the rough handling of children. We have seen it hail the return of persons it knew with as lively joy as any animal could well testify, and this in the case of individuals who had never fed it; but it is understood — with what general truth may perhaps be questioned, — that while the dog will mourn, and even pine to death, over the dead body of its master, the cat feels no compunction in making it its prey. It is needless to observe, however, that the cat is very much inferior to the dog in intellect, on which account some allowance must be granted.

"With respect to the domestic cat, also, another consideration may be borne in mind, which is, that there can be little doubt that its nature has been considerably modified by domestication, which has gradually rendered it less exclusively carnivorous than its wild congeners. It is even remarkable that instances of the rapacity of this animal towards young children are not of frequent occurrence."

If, however, the dog is more certain and faithful in his affection, the cat is more demonstrative, and expresses her affection in a more lively manner. We have seen a young cat recently, which had an extraordinary attachment to her master. In the morning, on entering the dining-room, where she usually slept upon a sofa, she would rouse herself, and contemplate him for a few moments with the liveliest satisfaction, when she would fly to his feet, rolling over and purring in great apparent enjoyment; after which she would climb up and nestle in his bosom for a short time, and close her demonstrations of love by placing her fore legs around his neck, like a pair of arms, and thus embracing him, with her head pressed against his cheek, would fall asleep.

ANECDOTES OF THE CATS.

As the anecdotes illustrative of the habits and nature of the larger *Felinae* were incorporated in the history of the several species, the ensuing collection has regard, almost exclusively, to the domestic animals.

THE INDIGNANT CAT. — A lady at Potsdam, in Prussia, tells an anecdote of one of her children, who, when about six years old, got a splinter of wood into her foot early one morning, and sitting down on the floor of her chamber, cried most vehemently. Her elder sister, asleep in the same apartment, was in the act of getting up to inquire the cause of her sister's tears, when she observed the cat, who was a favorite playmate of the children, and of a gentle and peaceable disposition, leave her seat under the stove, go up to the crying girl, and, with one of her paws, give her so

smart a blow on the cheek as to draw blood, and with the utmost gravity resume her seat under the stove, and relapse into slumber. As she was otherwise so harmless, the conclusion was, that she intended this as a chastisement for being disturbed, in hopes that she might enjoy her morning nap without interruption.

A CASE OF RECOLLECTION.—A lady, residing in Glasgow, had a handsome cat sent her from Edinburgh. It was conveyed to her in a close basket, and in a carriage. She was carefully watched for two months, but having produced a pair of young ones, at that time she was left to her own discretion, which she very soon employed in disappearing with both her kittens. The lady in Glasgow wrote to her friend in Edinburgh, deplored her loss, and the cat was supposed to have strayed away. About a fortnight, however, after her disappearance from Glasgow, her well-known mew was heard at the street door of her old mistress in Edinburgh, and there she was with both her kittens! they in the best condition, but she very thin. It is clear that she could only carry one kitten at a time. The distance from Edinburgh to Glasgow being forty miles, she must have travelled one hundred and twenty miles at least! Her prudence must likewise have suggested the necessity of journeying in the night, with many other precautions for the safety of her young.

THE WATCHMAN'S CAT.—“One of the most singular instances of attachment or fancy in the common cat, took place with one which we have often seen in attendance upon the watchman in St. James's Square, Edinburgh. When the man commenced his rounds, the cat was as regularly at its post, and continued walking with him during the whole night. This continued, we believe, for nearly two years; and when we last saw the man, the cat was in his company. Upon the approach of any person, the cat would run up to the guardian of the night, and rub against his legs until the individual had passed. In the quieter hours, towards morning, he ventured to a greater distance, but would always appear at the call or whistle of his protector.”

A PHILOSOPHICAL CAT.—“I once saw,” says De la Croix, “a lecturer upon experimental philosophy place a cat under the glass receiver of an air-pump, for the purpose of demonstrating that very certain fact, that life cannot be supported without air and respiration. The lecturer had already made several strokes with the piston, in order to exhaust the receiver of its air, when the animal, who began to feel herself very uncomfortable in the rarefied atmosphere, was fortunate enough to discover the source from which her uneasiness proceeded. She placed her paw upon the hole through which the air escaped, and thus prevented any more from passing out of the receiver. All the exertions of the philosopher were now unavailing. In vain he drew the piston; the cat's paw effectually prevented its operation.

Hoping to effect his purpose, he let air again into the receiver, which as soon as the cat perceived, she withdrew her paw from the aperture; but whenever he attempted to exhaust the receiver, she applied her paw as before. All the spectators clapped their hands in admiration of the wonderful sagacity of the animal, and the lecturer found himself under the necessity of liberating her, and substituting in her place another, that possessed less penetration, and enabled him to exhibit the cruel experiment."

A GRATEFUL CAT.—"I was once on a visit to a friend in the country, who had a favorite cat and dog, which lived together on the best possible terms, eating from the same plate, and sleeping on the same rug. Puss had a young family, and Pincher was in the habit of making a daily visit to the kittens, whose nursery was at the top of the house. One morning there was a tremendous storm of thunder and lightning. Pincher was in the drawing-room, and puss was attending to her family in the garret. Pincher seemed annoyed by the vivid flashes of lightning; and, just as he had crept nearer to my feet, some one entered the room, followed by puss, who walked in with a disturbed air, and mewing with all her might. She came to Pincher, rubbed her face against his cheek, touched him gently with her paw, walked to the door, stopped, looked back, and mewed, — all of which said, as plainly as words could have done, 'Come with me, Pincher; ' but the dog was too much alarmed himself to give any consolation to her, and took no notice of the invitation.

"The cat then returned, and renewed her application with increased energy; but the dog was immovable, though it was evident that he understood her meaning, for he turned away his head with a half-conscious look, and crept closer to me, and puss soon left the room. Not long after this, the mewing became so piteous that I could no longer resist going to see what was the matter. I met the cat at the top of the stairs, close by the door of my chamber. She ran to me, rubbed herself against me, and then went into the room, and crept under the wardrobe. I then heard two voices, and discovered that she had brought down one of her kittens, and lodged it there for safety; but her fears and cares being so divided between the kitten above and this little one below, I suppose she wanted Pincher to watch by this one while she went for the other, for, having confided it to my protection, she hastened up stairs. Not, however, wishing to have charge of the young family, I followed her up, taking the kitten with me, placed it beside her, and moved the little bed farther from the window, through which the lightning flashed so vividly as to alarm poor puss for the safety of her progeny. I then remained in the garret till the storm had passed away.

"On the following morning, much to my surprise, I found puss waiting for me at the door of my apartment. She accompanied me down to breakfast,

sat by me, and caressed me in every possible way. She had always been in the habit of going down to breakfast with the lady of the house ; but on this morning she had resisted all her coaxing to leave my door, and would not move a step till I had made my appearance. She had never done this before, and never did it again. She had shown her gratitude to me for the care of her little ones, and her duty was done."

THE PHILANTHROPIC CAT.—"A country gentleman of our acquaintance, who is neither a friend to thieves nor poachers, has at this moment in his household a favorite cat, whose honesty, he is sorry to say, there is but too much reason to call in question. The animal, however, is far from being selfish in her principles, for her acceptable gleanings she regularly divides among the children of the family in which her lot is cast. It is the habit of this grimalkin to leave the kitchen or parlor as often as hunger and an opportunity may occur, and wend her way to a certain pastry-cook's shop, where, the better to conceal her purpose, she endeavors slyly to ingratiate herself into favor with the mistress of the house. As soon as the shopkeeper's attention becomes engrossed in business or otherwise, puss contrives to pilfer a small pie or tart from the shelves on which they are placed, speedily afterwards making the best of her way home with her booty.

"She then carefully delivers her prize to some of the little ones in the nursery. A division of the stolen property quickly takes place ; and here it is singularly amusing to observe the sagacious animal, not the least conspicuous among the numerous group, thankfully munching her share of the illegal traffic. We may add, that the pastry-cook is by no means disposed to institute a legal process against poor Mrs. Puss, as the children of the gentleman to whom we allude are honest enough to acknowledge their four-footed playmate's failings to papa, who willingly compensates any damage the shopkeeper may sustain from the petty depredations of the would-be philanthropic cat."

MURDERERS DISCOVERED BY A CAT.—In the month of July, 1811, a woman was murdered in Paris. A magistrate, accompanied by a physician, went to the place where the murder had been committed, to examine the body. It was lying upon the floor, and a greyhound, who was standing by the corpse, licked it from time to time, and howled mournfully. When the gentlemen entered the apartment, he ran to them without barking, and then returned, with a melancholy mien, to the body of his murdered mistress. Upon a chest, in a corner of the room, a cat sat motionless, with eyes, expressive of furious indignation, steadfastly fixed upon the body. Many persons now entered the apartment ; but neither the appearance of such a crowd of strangers, nor the confusion that prevailed in the place, could make her change her position.

In the mean time, some persons were apprehended on suspicion of being the murderers, and it was resolved to lead them into the apartment. Before the cat got sight of them, when she only heard their footsteps approaching, her eyes flashed with increased fury, her hair stood erect, and so soon as she saw them enter the apartment she sprang towards them with expressions of the most violent rage, but did not venture to attack them, probably afraid of the numbers that followed. Having turned several times towards them with a peculiar ferocity of aspect, she crept into a corner, with a mien indicative of the deepest melancholy. This behavior of the cat astonished every one present. The effect which it produced upon the murderers was such as almost amounted to an acknowledgment of their guilt. Nor did this remain long doubtful, for a train of accessory circumstances was soon discovered, which proved it to a complete conviction.

THE CAT THAT NURSED A CHICKEN.—In the summer of 1792, a gentleman who lived in the neighborhood of Portsmouth, England, had a cat which had a litter of kittens four or five days after a hen had brought out a brood of chickens. As he did not wish to keep more than one cat at a time, the kittens were all drowned, and the same day the cat and one chicken were missing. Diligent search was immediately made in every place that could be thought of, both in and out of the house, to no purpose; it was then concluded that some mischance had befallen both. Four days afterwards, however, the servant, having occasion to go into an unfrequented part of the cellar, discovered, to his great astonishment, the cat lying in one corner, with the chicken hugged close to her body, and one paw laid over it, as if to preserve it from injury. The cat had adopted chicken were brought into a closet in the kitchen, where they continued some days, the cat treating the chicken in every respect as a kitten. Whenever the chicken left the cat to eat, she appeared very uneasy; but, on its return, she received it with the affection of a mother, pressed it to her body, purred, and seemed perfectly happy. If the chicken was carried to the hen, it immediately returned to the cat. The chicken was by some accident killed, and the cat would not eat for several days afterwards, being inconsolable for its loss.

THE CAT AND HER DOG PET.—"I had," says M. Wenzel, "a cat and dog which became so attached to each other that they would never willingly be asunder. Whenever the dog got any choice morsel of food, he was sure to divide it with his whiskered friend. They always ate sociably out of one plate, slept in the same bed, and daily walked out together. Wishing to put this apparently sincere friendship to the proof, I one day took the cat by herself into my room, while I had the dog guarded in another apartment. I entertained the cat in a most sumptuous manner, being desirous

MAMMALIA.



THE PHARAOH WOLF.



SACALIUS APIENS
(Common Jackal.)



HYAENA VULGARIS
(The Hyena.)



VULPES ALOPEX
(The Coal Fox.)



LUPUS VULGARIS
(Common Wolf.)



THOUS MESOMELAS
(Pied Mesomelas.)

BOSTON, SAMUEL WALKER & CO.

to see what sort of a meal she would make without her friend, who had hitherto been her constant table companion. The cat enjoyed the treat with great glee, and seemed to have entirely forgotten the dog. I had had a partridge for dinner, half of which I intended to keep for supper. My wife covered it with a plate, and put it into a cupboard, the door of which she did not lock. The cat left the room, and I walked out upon business. My wife, meanwhile, sat at work in an adjoining apartment.

"When I returned home, she related to me the following circumstances: The cat, having hastily left the dining-room, went to the dog, and mewed uncommonly loud, and in different tones of voice, which the dog, from time to time, answered with a short bark. They then went both to the door of the room where the cat had dined, and waited till it was opened. One of my children opened the door, and immediately the two friends entered the apartment. The mewing of the cat excited my wife's attention. She rose from her seat, and stepped softly up to the door, which stood ajar, to observe what was going on. The cat led the dog to the cupboard which contained the partridge, pushed off the plate which covered it, and, taking out my intended supper, laid it before her canine friend, who devoured it greedily. Probably the cat, by her mewing, had given the dog to understand what an excellent meal she had made, and how sorry she was that he had not participated in it, but, at the same time, had given him to understand that something was left for him in the cupboard, and persuaded him to follow her thither. Since that time I have paid particular attention to these animals, and am perfectly convinced that they communicate to each other whatever seems interesting to either."

A CAT'S STRATAGEM. — A cat belonging to an elderly lady in Bath, England, was so attached to her mistress, that she would pass the night in her bed-chamber, which was in the fourth story. Outside the window was the parapet wall, on which the lady often strewed crumbs for the sparrows that came to partake of them. The lady always sleeping with her window open, the cat would pounce upon the birds and kill them. One morning, giving a "longing lingering look" at the top of the wall, and seeing it free from crumbs, she was at a loss for an expedient to decoy the feathered tribe, when, reconnoitring, she discovered a small bunch of wheat suspended in the room, which she sprang at, and succeeded in getting down. She then carried it to the favorite resort of the sparrows, and actually threshed the corn out by beating it on the wall, then hiding herself. After a while the birds came, and she resumed her favorite sport of killing the dupes of her sagacity.

THE UNNATURAL MOTHER. — A cat belonging to a gentleman of Sheffield, England, carried her notions of beauty so far that she would not con-

descend to nourish and protect her own offspring if they happened to be tinted with colors different from what adorned her own figure,—which was what is usually denominated tortoise-shell. She happened, on one occasion only, to produce one kitten of a jet black. The cruel mother drew the unfortunate little creature out of the bed in which it lay, and refusing to give it suck, it perished on the cold ground. Some time after she gave birth to three more, one of which had the misfortune not to be clad in the same colors as the mother. It was, therefore, ousted by the unnatural parent; and although again and again replaced in its bed, it was frequently turned out again. The owner of the cat, finding it useless to persist in what puss had determined should not be, in humanity consigned the kitten to a watery grave — the victim of a parent's pride and cruelty.

DUEL BETWEEN A CAT AND HAWK.—A cat, which had a numerous litter of kittens, one bright day in spring encouraged her little ones to frolic in the vernal beams of the morn, about the stable door, where she dwelt. While she was joining them in a thousand tricks and gambols, a large hawk, who was sailing above the barn-yard, in a moment darted upon one of the kittens, and would have as quickly borne it off, but for the courageous mother, who, seeing the danger of her offspring, sprang on the common enemy, who, to defend itself, let fall the prize. The battle presently became severe to both parties. The hawk, by the power of his wings, the sharpness of his talons, and the strength of his beak, had for a while the advantage, cruelly lacerating the poor cat, and actually deprived her of one eye in the conflict; but puss, no way daunted at the accident, strove, with all her cunning and agility, for her kittens, till she had broken the wing of her adversary. In this state, she got him more within the power of her claws, and availing herself of this advantage, by an instantaneous exertion she laid the hawk motionless at her feet; and, as if exulting in the victory, tore the head off the vanquished tyrant. This accomplished, disregarding the loss of her eye, she ran to the bleeding kitten, licked the wounds made by the hawk's talons in its tender sides, and purred while she caressed her liberated offspring.

A REMARKABLE MANIFESTATION OF INTELLIGENCE.—A young lady of Boston furnishes the following interesting anecdote, which affords another proof that the cat is quite liberally endowed with the reflective power. "Early one morning, before any of the family had arisen, we heard the inside blinds of the drawing-room opening. Thinking that the noise might possibly have been caused by a burglar, who was endeavoring to effect an entrance, we descended to the room, but after searching we could find no person there, although the blinds were open. This being repeated for some time, we watched, and at length discovered that the

blinds had been opened every morning by the cat. After this she learned to open all the doors by turning the handles or knobs, and when they were bolted, would turn and twist the handle until she attracted our attention. She was also very fond of music, and when I played on the piano, would jump on the top of the case and give her whole attention to the piece. When she was alone in the room, and the piano was open, she would walk up and down on the keys for five or ten minutes, seeming to enjoy the music she made."

GENUS *LYNCHUS*. *The Lynxes*.—The lynxes are short-tailed cats, with pencil tufts to their ears (see Plate XIII.), and fur distinguished by a great variety of markings. It has been said that these animals were kept and trained by the ancients for hunting; but, if such were the fact, they must have degenerated in a most remarkable manner, as they now possess no instincts nor sagacity which would qualify them for a use of this kind. Even the caracal—the true lynx of the ancients—shows no capacity for any considerable degree of education. There are twelve or thirteen species, and we have no knowledge that any individual of either has ever been even tolerably tamed. As they offer no points of peculiar interest, we shall pass them by with a brief description.

The *L. caracal* is an inhabitant of Africa and South-eastern Asia. Its color on the upper parts is vinous, reddish-brown, shading into white upon the breast and belly; ears very long, with tufts of hair at the tips. It feeds on small animals and birds; the latter it pursues upon trees with great activity. Allied to the above is the golden caracal (*L. aurata*). The ears of this species are without tufts. The color is a bright yellowish red above, reddish-white below, and white upon the throat. The *L. chelidogaster* is an inhabitant of Chili, of a gray color, spotted with chocolate-brown. The BOOTTED LYNX (*L. caligata*) is a native of Africa and Southern India, of a bluish-gray color, tinged with reddish on the lower parts. The leg is black from the heel to the first joint, which in appearance somewhat resembles a boot, whence the name. The BLACK-FOOTED CAT (*L. nigripes*) is a native of South Africa, of a light-brown ochre color, marked with long black patches; has the tail spotted and feet black. The CHAUS (*L. chaus*) is a native of North Africa, of a deep yellowish-brown upon the back; yellower below, the tail is black at the tip, and marked with three or four alternate rings of black and white. It dwells in marshy and boggy regions, and on the banks of rivers; hunts during the night, its prey being birds, small gnawing animals, and fishes. The CANADA LYNX (*L. Canadensis*) inhabits Canada; has the fur very long in the winter; brownish-gray above, pure white below; tail tipped with black. It is a timid creature, in-

capable of attacking any of the large quadrupeds, but well armed for the capture of the American hare, on which it chiefly preys. It makes, Dr. Richardson observes, a poor fight when it is surprised by a hunter on a tree, for though it spits like a cat, and sets its hair up, it is easily destroyed by a blow on the back with a slender stick. It never attacks a man. It swims well, and will cross a river or lake two miles in width; but its movements are slow and awkward on the land. It breeds once a year, and has two young at a time. The natives eat its flesh, which is white and tender, but without flavor. The BAY LYNX (*L. rufus*) inhabits the banks of Columbia River, United States, and is distinguished for its very long fur. Its color is grayish-brown, with a darker dorsal stripe; the neck and sides are of a pale chestnut, varied with short transverse stripes of blackish brown. The BANDED LYNX (*L. fuscata*) inhabits the woody countries bordering on the Pacific Ocean. It is of a reddish-brown color, irregularly varied with small spots of dark brown, and upon the back banded with black stripes. The MEXICAN LYNX (*L. maculata*) is a native of Mexico, of a reddish-gray color above, very dark upon the back; white below, blotched with brown. The limbs are spotted with brown, and the tail, which is black at the tip, is marked with three or four alternate black and white bands. The EUROPEAN LYNX (*L. lynx*) has very long fur, of a dull reddish-gray color above, marked upon the sides with oblong spots of reddish-brown; the lower parts are white, clouded with black mottlings. This lynx is nearly as large as a leopard, and inhabits the mountainous parts of Europe, from Scandinavia to Naples. It is found also in the north of Africa. It is said, we believe on the authority of Professor Nilsson, that there are three other large species in Scandinavia, but they are apparently not well known to naturalists.

With the lynxes the great family of the Felinae closes.

The remaining *Digitigrade* animals are comprised in the following group, which is separated into three genera:—

THE MUSTELIDÆ.

The animals composing this family have a short, obtuse muzzle, and on either side in each jaw one true molar, the upper being well developed and transverse. The false molars are six above and eight below. Many of them are valuable for their fur; but all are generally regarded with disgust on account of the extremely offensive, fetid odor they emit when excited.

GENUS *MUSTELA*. There are numerous species.

THE FITCHET, OR POLECAT (*M. putorius*).—This animal is well known in Europe, but is not found in America. It is about twenty-one inches in length, and is distinguished for its very offensive odor. The

female has a curious propensity for laying in a store of food, often stowing away frogs and toads in an apartment in its burrow, disabling each, without killing it, by puncturing the skull. An instance of the kind is related in Bewick's *Quadrupeds*. "During a severe storm, one of these animals was traced in the snow from the side of a rivulet to its hole. As it was observed to have made frequent trips, and as other marks were to be seen in the snow which could not be easily accounted for, it was thought a matter worthy of greater attention. Its hole was accordingly examined, the polecat taken, and eleven fine eels were discovered to be the fruits of its nocturnal exertions. The marks on the snow were found to have been made by the motions of the eels while in the creature's mouth."

THE FERRET (*M. furo*) is much like the former in character, and is considered by some a variety of it, although the first is a native of Europe, and the latter was introduced from Africa to Spain, to destroy the rabbits, which, at a time during the Roman rule, desolated the peninsula. Its color is a pale yellow, grizzled with long, black hairs. It is often tamed, but even in domestication is a dangerous animal; and one instance is recorded where it came near killing a young child.

It has an extraordinary antipathy to rabbits, and is remarkable for the tenacity of its bite. A bargeman once finding himself much incommoded by rats, procured a ferret to destroy them. The ferret remaining away a considerable time, he thought that it was devouring some rats that it had killed, and went to sleep, but was awakened by the ferret, who was commencing an attack upon him. The animal had seized him near the eyebrow, and the man, after trying in vain to dislodge it, was obliged to cut off its head with a knife, and even then his eyebrow was with difficulty released from the teeth.

THE ALPINE FOUTMART (*M. alpina*) is smaller than the polecat, and of a sulphur-yellow color. It inhabits the Altaic mountains. The JAVA FERRET (*M. nudipes*), of a brilliant golden-yellow, is a native of Java; and the PEROUASCA (*M. Sarmatica*), of a rich brown, back and sides mottled with yellow, throat and belly black, inhabits Poland and Southern Russia.

THE COMMON WEASEL (*M. vulgaris*).—This animal inhabits the temperate zone of the northern hemisphere, and is well known in the Old and New World. It is reddish-brown above, and white beneath. Its total length is seven and a half inches. In cold climates its fur changes to white in winter. It is an animal of surprising courage, having the boldness of the lion and the tenacity of the bull-dog. It will attack animals far larger than itself, and proves sometimes troublesome even to man. There is an African variety double its size, distinguished by the same ferocious disposition.

Weasels seem to unite, in many cases, for mutual defence, or the attack of man. In January, 1818, a laborer in the parish of Glencairn, Dumfriesshire, was suddenly attacked by six weasels, which rushed upon him from an old dike in the field where he was at work. The man, alarmed at such a furious onset, instantly betook himself to flight; but he soon found he was closely pursued. Although he had about him a large horsewhip, with which he endeavored, by several back-handed strokes, to stop them, yet so eager was the pursuit of the weasels, that he was on the point of being seized by the throat, when he luckily noticed, at some distance, the fallen branch of a tree, which he made for, and, hastily snatching it up, manfully rallied upon his enemies, and had such success that he killed three of them, and put the remaining three to flight.

A similar case occurred some years ago at Gilmerton, near Edinburgh, when a gentleman, observing a person leaping about in an extraordinary manner, made up to him, and found him beset, and dreadfully bitten, by about fifteen weasels, which continued their attack. Being both strong persons, they succeeded in killing a number, and the rest escaped by flying into the fissures of a neighboring rock. The account the person gave of the commencement of the affray was, that, walking through the park, he ran at a weasel which he saw, and made several attempts to strike it, remaining between it and the rock, to which its retreat lay. The animal, being thus circumstanced, squeaked aloud, when an instantaneous sortie was made by the colony, and an attack commenced.

The weasel is exceedingly difficult to tame. When kept in a cage, it seems in a perpetual state of agitation, is terrified at the sight of all who approach to look at it, and generally endeavors to hide itself behind the straw or other substances which may be at the bottom of its cage. Yet instances are not wanting to prove that the weasel may be brought into complete subjection. Mademoiselle de Laistre, in a letter on this subject, gives a very pleasing account of the education and manners of a weasel which she took under her protection, and which frequently ate from her hand, seemingly more delighted with this manner of feeding than any other. "If I pour," says this lady, "some milk into my hand, it will drink a good deal; but if I do not pay it this compliment, it will scarcely take a drop. When satisfied, it generally goes to sleep. My chamber is the place of its residence; and I have found a method of dispelling its strong smell by perfumes. By day it sleeps in a quilt, into which it gets by an unsewn place which it has discovered on the edge; during the night it is kept in a wired box or cage, which it always enters with reluctance and leaves with pleasure. If it be set at liberty before my time of rising, after a thousand little playful tricks it gets into my bed, and goes to sleep on my hand or on my bosom.

" If I am up first, it spends a full half hour in caressing me ; playing with my fingers like a little dog, jumping on my head and on my neck, and running round on my arms and body with a lightness and elegance which I never found in any other animal. If I present my hands at the distance of three feet, it jumps into them without ever missing. It shows a great deal of address and cunning in order to compass its ends, and seems to disobey certain prohibitions merely through caprice. During all its actions it seems solicitous to divert, and to be noticed ; looking, at every jump, and at every turn, to see whether it be observed or not. If no notice be taken of its gambols, it ceases them immediately, and betakes itself to sleep ; and when awoken from the soundest sleep, it instantly resumes its gayety, and frolics about in as sprightly a manner as before. It never shows any ill-humor, unless when confined, or teased too much ; in which case it expresses its displeasure by a sort of murmur, very different from that which it utters when pleased. In the midst of twenty people, this little animal distinguishes my voice, seeks me out, and springs over everybody to come to me. His play with me is the most lovely and caressing ; with his two little paws he pats me on the chin, with an air and manner expressive of delight. This, and a thousand other preferences, show that his attachment is real.

" When he sees me dressed to go out, he will not leave me, and it is not without some trouble that I can disengage myself from him. He then hides himself behind a cabinet near the door, and jumps upon me, as I pass, with so much celerity, that I often can scarcely perceive him. He seems to resemble a squirrel in vivacity, agility, voice, and his manner of murmuring. During the summer he squeaks and runs all the night long ; but since the commencement of the cold weather I have not observed this. Sometimes, when the sun shines, while he is playing on the bed, he turns and tumbles about, and murmurs for a while.

" From his delight in drinking milk out of my hand, into which I pour a very little at a time, and his custom of sipping the little drops and edges of the fluid, it seems probable that he drinks dew in the same manner. He very seldom drinks water, and then only for the want of milk, and with great caution, seeming only to refresh his tongue once or twice, and to be even afraid of that fluid. During the hot weather it rained a good deal. I presented to him some rain water in a dish, and endeavored to make him go into it, but could not succeed. I then wetted a piece of linen cloth in it, and put it near him, when he rolled upon it with extreme delight. One singularity in this charming animal is his curiosity ; it being impossible to open a drawer or box, or even to look at a paper, but he will examine it also. If he gets into any place where I am afraid to let him stay, I take a paper or a book, and look attentively at it, when he immediately runs upon

my hand, and surveys, with an inquisitive air, whatever I happen to hold. I must further observe, that he plays with a young cat and dog, both of some size, getting about their necks and paws without their doing him the least harm."

The following story regarding a weasel is told in Selkirkshire: "A group of haymakers, while busy at their work on Chapelhope Meadow, at the upper end of St. Mary's Loch,—or rather of the Loch of the Lowes, which is separated from it by a narrow neck of land,—saw an eagle rising above the steep mountains that enclose the narrow valley. The eagle himself was, indeed, no unusual sight; but there is something so imposing and majestic in the flight of this noble bird, while he soars upwards in spiral circles, that it fascinates the attention of most people. But the spectators were soon aware of something peculiar in the flight of the bird they were observing. He used his wings violently, and the strokes were often repeated, as if he had been alarmed and hurried by unusual agitation; and they noticed, at the same time, that he wheeled in circles that seemed constantly decreasing, while his ascent was proportionally rapid. The now idle haymakers drew together in close consultation on the singular case, and continued to watch the seemingly distressed eagle, until he was nearly out of sight, rising still higher and higher into the air. In a short while, however, they were all convineed that he was again seeking the earth, evidently not, as he ascended, in spiral curves; it was like something falling, and with great rapidity. But, as he approached the ground, they clearly saw he was tumbling in his fall like a shot bird; the convulsive fluttering of his powerful wings stopping the descent but very little, until he fell at a short distance from the men and boys of the party, who had naturally run forward, highly excited by the strange occurrence. A large black-tailed weasel, or stoat, ran from the body as they came near; turned with the *non-chalance* and impudence of the tribe; stood up upon its hind legs; crossed its fore paws over its nose, and surveyed its enemies a moment or two,—as they often do when no dog is near,—and bounded into a saugh-bush. The king of the air was dead, and, what was more surprising, he was covered with his own blood; and, upon further examination, they found his throat cut, and the weasel has been suspected as the regicide until this day."

THE STOAT OR ERMINIE (*M. erminea*) is well known by its fur, with which all persons are familiar. In summer the animal is light-brown, which changes to a yellowish-white in winter. In warm countries, however, the fur never changes color. The ermine is spread through all the northern regions of the world, and is common to both the Old and New Continents. As an article of commerce it is highly esteemed. In Northern

Europe the ermine is now rare; but from Northern Asia thirty thousand skins have been sent in one season, exclusive of what may have been forwarded to China and Persia; and from North America, the Hudson's Bay and United States fur companies annually collect at least as many, without reckoning the immense consumption of this peltry by the native Indians, whose chiefs, braves, and even women, adorn themselves profusely with slips of the skin which contain the back and tail. A considerable traffic also in ermine skins is carried on from the west coast of America with China and Japan. In polished communities the fur adorns the robes of judges and princes, and ladies' dresses; and is formed also into capes, muffs, tippets, &c. The animal is usually caught in traps; but the natives sometimes shoot it with blunt arrows. It is this northern species, which becomes white in winter, that Pliny notices under the name of *M. ponticus*. In extremely cold winters the ermine moves southward.

THE SIBERIAN WEASEL (*M. Siberica*) equals the polecat in size; is of a pale-yellow, with a brown muzzle.

GENUS MARTES. *The Martens.*—The marten has all the spirit and audacity of the weasel, attacking recklessly animals ten times its size and strength, and generally coming off victor. It may be tamed; and one is mentioned as being extremely fond of a dog that had been bred with it, often playing with it, lying on its back, and biting without anger or injury.

The species are numerous. The Pine marten (*M. vulgaris*) and Beech marten (*M. foinina*) are inhabitants of Europe. The *M. Hardwickii* is a native of India. In the above species the prevailing color is yellowish. The Sable (*M. zibellina*) is of the size of the marten. Its color, in the proper season, is a fine, glossy, deep black. In milder climates it is sometimes tawny, and in Western America of a bright chestnut. The animal is found on both continents in the most northern forests, and is caught in traps set by hunters. Formerly the exiles in Siberia were condemned to spend the long and rigorous winters of that region in the woods, in pursuit of them, during which time their sufferings were intolerable. At a later period the Russian government has employed soldiers to hunt them. "They are taxed a certain number of skins yearly, and are obliged to shoot with only a single ball, to avoid spoiling the skin, or else with crossbows and blunt arrows. As an encouragement, the hunters are allowed to share among themselves the surplus of those skins which they thus procure; and this, in the process of six or seven years, amounts to a considerable sum. A colonel, during his seven years' stay, gains about four thousand crowns for his share, and the common men earn six or seven hundred each."

The Huron marten (*M. Huro*) is of a light yellow color; the White-eared marten (*M. leucotis*) is of a deep brown; the Mink (*M. lutreola*), an amphibious animal, with feet semi-palmate, is blackish-brown. It bears some resemblance to the otter. The American mink (*M. vison*), body deep-brown, feet semi-palmate, tail black; also amphibious. The Chestnut mink (*M. rufa*) is of a bright fulvous chestnut. The Pekan (*M. Canadensis*) is gray-brown on the head, shoulders, and upper part of the back; the rest of the body is brown-black. It is often marked with a white spot on the throat. The Sable mink (*M. nigra*) has the head and sides of the neck fine gray; the rest of the body is a deep black.

All the above minks are hunted for their fur. The American species are well known and widely diffused. We have seen them playing, diving, and seeking their food in streams and on the banks, through a vast extent of country.

The remaining species is the fisher weasel of Pennant (*M. Pennantii*). This animal has the fur dark at the base, yellow above, and tipped with black, changing to chestnut on the back; tail shining black, and throat brown.

GENUS ZORILLO.—This name was given to a small Cape species by Buffon, believing that it was of the same genus as the American skunk. Zorillo signifies a little fox, and the skunk was thus designated by the Spaniards. The Cape zorillo (*Zor. Capensis*) is found at the Cape of Good Hope, and equals the polecat in size. It burrows in holes of its own digging. The head is rather round, and the tail very bushy. The general color is black, with four white bands, and sometimes a white spot on each cheek. It is common to the whole African continent.

We here terminate our observations on the Carnivorous *Digitigrades*, and proceed to a consideration of the *Plantigrades*.

This division of carnivorous animals, comprising those that place the whole sole of the foot upon the ground in walking, includes a great variety of genera and species, many of the individuals of which have no common resemblance apart from those characters which arbitrarily unite them in groups. Thus, the division commences with Mephites, the skunks, and terminates with Ursi, the bears.

GENUS MEPHITES.—The *Skunks*.—They have the muzzle obtuse; claws strong for digging; fur coarse, and tail very long and bushy. The species are distinguished by a gland which secretes a liquid, the nauseating fetidity of which is indescribable. It is used as a defence, and can be

ejected to a considerable distance. There are numerous species, all of which are thick-set in form, and wanting in activity. They live in burrows, subsist on birds, eggs, frogs, &c., and sometimes enter cellars and store-rooms in search of food. They are common to both Americas, from Canada to Chili, and all possess the same disgusting attribute, of the effects of which many anecdotes are related. A maid-servant was once seated by the coachman who was driving his vehicle through a wood in the State of New York, when a skunk, crossing the road, failing to spring through a split fence before the horses came up, became alarmed, and flung the contents of the fetid bag, by a whisk of the tail, full upon the clothes of the young woman, completely ruining them, besides making her sick for some days. Dogs, which attack them, no sooner feel the horrible effluvia in their nostrils, than they dig with their snouts, like hogs, into the ground, and often scratch their noses till they bleed profusely. Some years ago a Frenchman, who had settled at Hartford, Connecticut, was going home from Wethersfield, a place renowned for raising onions. It was evening, and in the twilight the man saw a little animal crossing the path before him. Not knowing or suspecting its character, he darted upon it, caught it, and put it in his pocket. When he reached home, he took it out, and a general exclamation of astonishment burst from the household at the extraordinary flavor of the little beast. "What is it?" "What can it be?" was the general inquiry. "I cannot say," said the Frenchman, "but I suppose it must be a Wethersfield kitten!"

On a certain occasion, Dr. B., an eminent divine, was walking at evening in a by-way, when he saw a small animal trotting along before him. He easily guessed its true character, and having a volume of Rees's Cyclopaedia under his arm, he hurled it with all his might at the suspicious quadruped. It took effect, but the animal retorted by discharging, both upon the Cyclopaedia and the D. D., a shaft from his abominable quiver. It seems that the event made an indelible impression, both upon the garments and the memory of the divine; the former he buried; and when, some years after, he was advised to write a book against a rival sect, he replied, "No, no; I once threw a quarto at a skunk, and got the worst of it. I shall not repeat the folly."

"In the year 1749," says Kahn, "one of these animals came near the farm where I lived. It was in winter time, during the night, and the dogs, which were on watch, pursued it for some time, until it discharged against them. Although I was in a bed at some distance from the scene of action, I thought I should have been suffocated, and the cows and oxen, by their lowing, showed how much they were affected by the stench.

"About the end of the same year another of these animals crept into our

cellar, but did not exhale the smallest scent when undisturbed. A foolish woman, however, who perceived it one night by the shining of its eyes, killed it, and at that moment the fetid odor began to spread. The cellar was filled with it to such a degree that the woman kept her bed for several days; and all the bread, meat, and other provisions that were kept there, were so infected that they were obliged to be thrown out of doors."

The species are all striped with black and white, or brown and white, but the stripes vary in number even in the same species.

The common skunk (*Mephitis Americana*) is too well known to need any description; the *M. plurilineata* is distinguished by nine white stripes on a black ground. The Texas skunk (*M. varians*) is black with a narrow white streak in the forehead. The Mexican skunk (*M. Mexicanus*) has the fur soft and silky, color black, with narrow streak on the nose, and small white spots on each shoulder. *M. bicolor* is also a North American species, white and black. *M. conepatus* inhabits the regions near the Straits of Magellan; is likewise black, with a broad white band on each side of the back, united over the crown. The Chili skunk (*M. Chilensis*) is of a deep chestnut color, with two white streaks on the sides, united on the shoulders, and also connected at the back of the head in the form of a crescent.

GENUS GALICTIS.—We know of but one species, which inhabits South America. It has one tubercular, a carnivorous, and two false molars above; and one tubercular, a carnivorous, and four false molars below. It has the mephitic pouch, but not so fetid as in the skunk. The anterior head, cheeks, sides, limbs, and tail are black; a broad white band passes across the forehead, above the eyes and below the ears, to the shoulders; the body is gray. These characters distinguish the banded grison (*Galictis vittata*). The animal dwells in hollow trees, and has a furious temper.

GENUS EIRA.—The dental structure of this genus is the same as that of the grison, which it strongly resembles, and at the same time shows a degree of relationship to the otters. The species are equally fitted for the land or water; are expert swimmers and nimble climbers. The *Eira barbara* is about the size of the marten; of a blackish-brown color, with a yellowish-white spot on the throat. It exhales a musky odor. The *Eira ilya* is entirely blackish-brown, with the head, neck, and throat gray. The *Eira galera* has the head, neck, and throat yellowish-gray, with a slender white line across the throat, and the body black; and the *Eira ferruginea* is a fulvous chestnut-brown, with the exception of the extremities and tail, which are black. These are all tropical animals.

GENUS MELLIVORA.—There is but one species known; the Ratel (*M. ratel*), which represents the gluttons of the North, in the Southern

hemisphere. The ratel is about two feet in length, resembling the badger in form, of a gray color above, and black beneath, with a whitish line separating the two colors, from ears to tail. This animal does not, however, climb like the glutton, but is a remarkable miner, digging his way into the earth with his powerful claws, forming long subterranean galleries which lead to human graves, for the purpose of preying on the putrid bodies. He is very fond of honey, and is said to watch the honey cuckoo, and follow him to the bees' nest, and get a share of the plunder.

GENUS GULO. — The *Glutton*. — The Glutton is a somewhat ferocious, but very sagacious animal, rather heavy and slow in his movements, much resembling the badger in form. He inhabits the northern forests, and is seldom found south of Canada on this, or of Sweden on the Old Continent. His manner of hunting deer, and kindred animals, is very remarkable, and his *method* would seem, necessarily, to be the result both of reflection and observation. As in an open fight he could not hope to succeed with the formidable stag or reindeer, he resorts to stratagem. Knowing that these animals feed on a kind of moss, he gathers a quantity of it, and, carrying it in his mouth, he ascends a tree, and crawling out on an extending branch, drops it to the ground. He then waits patiently and motionless till a deer passes, and when the latter stoops to taste the lichen, thus uncovering his neck from the protection of his horns, the glutton makes a sudden spring, and alighting on the shoulders of his victim, pierces the flesh with his long and trenchant claws, and seizing with his teeth the great blood vessels of the neck, hangs there until the fated animal falls lifeless to the ground. If, however, there should be a river or lake near, the stag would instinctively dash into it, and doing so, would escape, as the glutton has a singular fear of water, and nothing can induce him to enter it.

He has a keen sense of smelling, and easily detects food which hunters sometimes bury very deep in the earth for preservation; and often the poor hunter returns, to find himself robbed of his whole store. A party of hunters in the employ of the Hudson's Bay Company was once plundered by this animal. "The animal had for many weeks been lurking about their tent, and committed many depredations on the game caught in their traps and snares, as well as eaten many of the foxes that were killed by guns set for the purpose, but he was too cunning to touch either gun or trap himself. The people thought they had adopted the best method to secure their provisions, by tying them in bundles, and laying them on the top of wood-piles. To their astonishment, when they returned, they found the greatest part of the pile thrown down, notwithstanding some of the trees with which it was constructed were as much as two men could carry. The wood was very much scattered about; and it was supposed that, in the animal's attempting

to carry off the booty, some of the small parcels of provisions had fallen down into the heart of the pile, and sooner than lose half of his prize, he was at the trouble of pulling away the wood. The bags of flour, oatmeal, and peas, though of no use to him, he tore all to pieces, and scattered the contents about on the snow; but every bit of animal food, consisting of beef, pork, bacon, venison, salted geese, and partridges in considerable quantities, he carried away."

There are two species, the *Gulo vulgaris*, which we have just described, and *Gulo lucus*, the wolverene, which is merely a variety of the glutton.

GENUS HELICTIS. The *Nyctuchs*.—There are two species, — *H. moschata* and *H. Orientalis*. They are Javanese animals, of the size of the polecat, of a brown color, with a white stripe along the back, and have a musky odor.

GENUS MELES. The *Badgers*.—The Badgers have the same dentition as the weasels, are slow in their movements, and of nocturnal habits. The tail is short, and usually held erect. These animals have the fetid pouch of the skunks, to which they are nearly allied. The European badger (*M. vulgaris*) is of a grayish color above, beneath black, with a dusky band on each side of the head, which is whitish. This common species has five toes on all the feet, well armed with sharp claws. Its habits are like those of the bear, is easily tamed, and, when attacked, fights with great persistency. Badger-baiting is a favorite, but very brutal and cruel amusement, in some parts of Europe.

The badger is said to be the most social of any quadruped in the universe. It is not known to quarrel with any other animal; even the fox, polecat, opossum, land crab, and snake make it resign its abode, although it is much stronger than any of them. It also lives in the greatest harmony with its own species, subsisting principally on nuts, roots, and vegetables. It is cleanly in its habits, being observed to perform its ablutions while the dew is on the ground.

The American badger (*Taxidius*) has a more carnivorous dentition than the former, and its claws are longer and stouter, enabling it to burrow with greater rapidity. There is but one species well known (*T. Labradoria*), which is valuable for the fine quality of its fur. The head is white, with a black bar down the cheek near the ear. In structure it resembles the European species.

In South America its flesh is esteemed as an article of food, and the hind quarters are cured like hams. The Indians form parties for hunting the animal. It is said that "a party of eight, in one of their expeditions, will destroy two or three hundred badgers and a quantity of deer on their return home, besides guanas. These hunting parties are so delightful, even to the

women, that the hopes of being allowed to accompany the men will make them behave well all the year. On these excursions they live well, and seem more happy than in the rainy season. On their way home they travel day and night rapidly, in spite of obstructions, carrying long poles between them, on which the animals are slung — the boys carrying the skins and lard ; the dogs, too, are well fed during this period, and seem to return with regret. A cloud of vultures generally hovers over them, and is seen by their clans a day or two before they arrive, who make every preparation to receive them ; their return is greeted like that of victors. The rainy nights are passed in recounting their exploits one to another."

The Bear badger (*Ursitaxus*) is an Asiatic animal, of the habits of which we know nothing.

The Sand Hog (*Arctonyx*) is also from Asia. The collared sand hog (*A. collaris*) resembles both a small bear and a hog. Its general color is yellowish-gray ; the limbs are black. It dwells in burrows, subsists on fruits and animals, but prefers the former. Defends itself in an upright posture when attacked, like the bear, and grunts like a hog.

GENUS *MYDAUS*. One species (*M. meliceps*), the Stinkard, is found in Java and Sumatra. It is about eighteen inches long, of a deep brown color, the head buff ; a broad, white streak extends from the forehead to the croup, and the tip of the tail and claws are white. These marks, together with the mephitic pouch, give it a skunk-like character.

GENUS *CERCOLEPTES*. The *Kinkajou*. — There is but one species, having plantigrade feet and a very long prehensile tail, as in the sapajous. It inhabits the warm regions of America, where it is named Poto. It is of a gentle disposition, feeding on honey, fruits, milk, and blood, and dwelling mostly on trees ; sits on its haunches, and uses the fore paws like the squirrel. The prehensile tail it also employs as a hand, and draws up with it a weight nearly equal to itself.

GENUS *NASUA*. The *Coatimondis*. — These animals, besides having many of the attributes and characters of the raccoons, are distinguished by a very long and movable snout. Though their feet are semi-palmate, they are skilful climbers and powerful diggers. They descend from trees head foremost, by turning the hind feet outwards. They emit a very disagreeable smell. The Red Coati (*N. rufa*; *Viverra Nasua*, Linn.). These rather singular creatures are a little less than a cat in size, are gregarious, forming small troops or families, and caution each other in danger by uttering a shrill cry. The Brown Coati (*N. fusca*) equals the former in size, and is described as "a ludicrously meddling, active, climbing, and inquisitive animal when in captivity." The Coati Mendi (*N. solitaris*) is a much larger animal than the former species, being three feet and eight inches

in length. He lives a solitary life during most of the year, and seems to delight in the depths of the forests. He does not burrow, and has no permanent abiding place; hunts by day, feeding on fruit, insects, and eggs. He moves with the sedateness of a philosopher, is more intelligent than the other species, of greater docility and capability of education, but is conscious of his own powers, and is ready to resent any invasion of his rights. He is a powerful animal, and more than a match for two hunting-dogs.

One other species is mentioned, *Nasua Monachus*; of this, however, nothing is known.

It is said that one species of this animal eats off its own tail! We doubt this, but will let Professor Godman speak for himself:—

"The extreme length of its tail, in which the blood circulates but feebly, exposes it to the influence of cold or frost; and the exceedingly tormenting irritation produced thereby leads the animal to gnaw and scratch the tail, to relieve the excessive itching. The disease spreads, and the anguish induces the coati to gnaw more furiously, and eventually its life is destroyed by the extension of the inflammation and irritability to the spine."

GENUS ARCTICTIS. *Binturongs*.—The Binturongs, also, by their dentition, are allied to the raccoons. They are covered with long hair, and have a tuft at each ear, with a long, hairy, prehensile tail, and long whiskers. They are natives of India. Although several species are spoken of, there is really but one known, the *Arct. Albifrons*. The male is black, with whitish muzzle, of the size of a large dog; the female is gray, with the tail and sides of the muzzle black, and about the size of a large cat. The animal is of a mild disposition, and easily tamed.

GENUS AILURUS. The *Panda*.—The Panda draws very near to the raccoons. The only species known, the Shining panda (*Il. refulgens*), is of the size of a cat. The color above is of a bright cinnamon-red, behind more fulvous, and black beneath. The head is whitish, and the tail is ringed with brown. It is a very beautiful animal, resides near rivers and mountain streams, and feeds on birds and small animals. It is arboreal, spending much of its time on trees.

GENUS PROCYON. The *Raccoons*.—These animals have been styled bears in miniature. They have three tuberculous back molars, the first being the carnivorous tooth, and three pointed false molars before them, forming a continuous series to the canines, which are straight and compressed. The raccoon belongs to the Western Continent.

The Common raccoon (*P. lotor*) is of grayish brown, the muzzle white, and the tail marked with white and black rings. It is often tamed, and has a singular habit of dipping its food into water before eating it. This animal has a peculiar method of fishing for crabs, of which it is remarkably

fond. Brichell, in his "History of North Carolina," furnishes a description of it. "It is fond of crabs, and, when in quest of them, will take its station by a swamp, and hang its tail over into the water, which the crabs mistake for food, and lay hold of it; as soon as the raccoon feels them pinch, it pulls up its tail with a sudden jerk, and they generally quit their hold upon being removed from the water. The raccoon instantly seizes the crabs in its mouth, removes them to a distance from the water, and greedily devours its prey. It is very careful how it takes them up, which it always does from behind, holding them transversely, in order to prevent their catching its mouth with their nippers."

The raccoon has a very curious and inquiring disposition, examining everything within its reach. His sharp claws enable him to climb trees with great facility. Like the squirrel, he sits on his haunches, and uses his fore-paws as hands. He is ready to eat nearly everything that is offered to him; is fond of strong liquors, and seems to enjoy the excitement of inebriation. He is a nocturnal animal, sleeping during the day, and seeking his food at night.

The Crab-eating raccoon (*P. cancrivorus*) of South America is of a brown ash color. It appears to be a mere variety of the former.

URSUS.—THE BEARS.

The bear is the largest and most powerful of the plantigrade group of carnivorous animals; and his great size, strength, and sagacity entitle him to be recognized as king of beasts in the north, as the lion is admitted to be the monarch of the animal kingdom in the south. The peculiar phenomena and singular characteristics exhibited by the bear; his ability to sit, stand, and walk upright; the mysterious habit of refraining from attacking or in any manner injuring a sleeping human being; the remarkable power of the voice, the varied and unearthly tones of which strangely impress the imagination of the listener; his mode of attacking his enemies, and defending himself; the frightful expression of his eyes, always showing determination and intelligence, but more terrible when a peculiar white membrane is half drawn across the eyeball, together with strength which enables him to carry a dead horse into the branches of a tree,—are peculiarities sufficiently marvellous to create a feeling of wonder and awe, not only among savage nations, but in more civilized communities. We can all of us remember with what breathless intensity we were wont to listen, when children, to the wonderful bear stories which were told us by mothers and sisters. No wonder, then, that uncivilized peoples regarded the bear with superstitious reverence. The American Indians believe him to be endowed with immortal attributes, and invoke his spirit to assist them in the chase. Similar superstitions spread

also through Northern Europe and Asia. The Laplanders were, and are now, in the habit of saying, that the bear has the sense of twelve men and the strength of ten, and thence called it the "Dog of God." They never venture to speak its proper name, for fear that it may do them some injury in revenge, but call it the "old gentleman in the fur cloak."

The Indians hold the opinion that the spirits of the bears they have slain still animate the substantial or shadowy forms of men; have mysterious powers of mischief and beneficence, which should be deprecated or invoked by offerings, prayers, and other ceremonies, such as smoking tobacco over the body as soon as one is slain in the chase, breathing the smoke into its nostrils, calling upon its spirit aloud, or by whispering into its ears, deprecating wrath for having made it a victim, and imploring its good will during the hunting season, dancing in its honor, and otherwise striving to propitiate its favor.

The Indian also often regarded the bear as the progenitor of his tribe, and consequently paid him almost divine honors. Distinguished warriors frequently assumed his name, as was indeed the case in the north of Europe. The Scandinavian Biorn and the English and French Biron, borne by so many heroes and grandees, are synonymous of the Latin *Ursus*—*bear*.

Pennant, the Welsh naturalist, gives an interesting and very amusing account of the manner in which the Indians hunt this animal. "A principal warrior first gives a general invitation to all the hunters. This is followed by a most serious fast of eight days, a total abstinence from all kinds of food: notwithstanding which, they pass the day in continual song. This they do to invite the spirits of the woods to direct them to the places where there is abundance of bears. They even cut the flesh in divers parts of their bodies, to render the spirits more propitious. They also address themselves to the *manes* of the beasts slain in preceding chases, as if it were to direct them in their dreams to plenty of game. One dreamer alone cannot determine the place of the chase; numbers must concur; but as they tell each other their dreams, they never fail to agree,—whether that may arise from complaisance, or by a real agreement in the dreamers, from their thoughts being turned perpetually on the same thing.

"The chief of the huntsmen gives a great feast, at which none dares to appear without first bathing. At this entertainment they eat with great moderation, contrary to their usual custom. The master of the feast himself touches nothing, but is employed in relating to the guests ancient tales of wonderful feats in former chases; fresh invocations to the manes of the deceased bears conclude the whole. They then sally forth amidst the acclamations of the village, equipped as if for war, and painted black. Every able hunter is on a level with a great warrior; he must have killed his dozen

great beasts before his character is established ; after which his alliance is as much courted as that of the most valiant captain. They then proceed on their way in a direct line ; neither rivers, nor marshes, nor any other impediments stop their course ; driving before them all the beasts which they find in their way. When they arrive at the hunting-ground, they surround as large a space as their company will admit, and then contract their order ; searching, as they close in, every hollow tree, and every place fit for the retreat of the bear, and continue the same practice till the time of the chase is expired.

"As soon as a bear is killed, they cut out the string of the tongue, and throw it into the fire. If it crackles and runs in, — which it is almost sure to do, — they accept it as a good omen ; if not, they consider that the spirit of the beast is not appeased, and that the chase of the next year will be unfortunate.

"The hunters live well during the chase, on provisions they bring with them. They return home with great pride and self-sufficiency ; for to kill a bear forms the character of a complete man. They again give a great entertainment, and now make a point to leave nothing. The feast is dedicated to a certain genius, perhaps Gluttony, whose resentment they dread if they do not eat every morsel, and even sup up the very melted grease in which the meat was dressed. The first course is the greatest bear they have killed, without even taking off the skin or removing the entrails, contenting themselves with singeing it.

"The Kamtschatkans formerly had a variety of inventions for destroying the bear, such as filling the entrance to its den with logs, and then digging down upon the animal, and killing it with spears. In Siberia, it is taken by making a trap-fall of a great piece of timber, which drops and crushes it to death, or by forming a noose on a rope fastened to a great log. The bear runs its head into the noose, and finding itself engaged, grows furious, and either falls down some precipice and kills itself, or wearies itself to death by its agitations.

"The killing of a bear in fair battle is reckoned as great a piece of heroism by the Kamtschatkans, as it is with the American Indians. The victor makes a feast on the occasion, and regales his neighbors with the beast ; then hangs the head and thighs about his tent by way of trophies. These people use the skins to lie on, and for coverlets ; also for bonnets, gloves, collars for their dogs, and soles for their shoes, to prevent them slipping on the ice. Of the shoulder-blades they make scythes to cut the grass ; of the intestines, covers for their faces, to protect them from the sun during spring ; and the Cossacks extend them over their windows instead of glass. The flesh and fat are among the chief dainties of the country.

"The Laplanders bring home the slain beasts in triumph; they erect a new tent near their former dwelling, but never enter it till they have flung off the dress of the chase. They continue in it three entire days, and the women keep at home the same space. The men dress the carcass of the bear in the new tent, and make their repast, giving part to the females, but take great care not to bestow on them a bit of the rump. After they have finished eating the flesh, they bury the bones with great solemnity, and place every bone in its proper position, from a firm persuasion that the bear will be restored, and reanimate a new body."

The flesh of this animal is very delicate, and there is no dish more delicious, as we know by frequent experiences, than a broiled or fried bear steak. In early life, in remote parts of the State of Maine, we had numerous opportunities of observing the habits, and also of engaging in the chase, of this animal. The most common mode of hunting was with dogs and guns; sometimes they were taken in pits, concealed under pliant branches, covered with foliage, and often were caught in huge traps. The flesh resembles pork, and often a layer of fat, four inches in depth, is found between the skin and flesh. The fat is whiter than lard, and a large quantity can be eaten without producing any uneasiness or disorder of the stomach.

The modes, however, that are adopted by the inhabitants of different countries for taking or destroying bears are very various. Of these, the following appear to be the most remarkable: In consequence of the well-known partiality of these animals for honey, the Russians sometimes fix to those trees where bees are lived a heavy log of wood, at the end of a long string. When the unwieldy creature climbs up to get at the hive, he finds himself interrupted by the log; he pushes it aside, and attempts to pass in; but, in returning, it hits him such a blow, that, in a rage, he flings it from him with greater force, which makes it return with increased violence; and he sometimes continues this till he is either killed or falls from the tree.

In Lapland, hunting the bear is often undertaken by a single man, who, having discovered the retreat of the animal, takes his dog along with him, and advances towards the spot. The jaws are tied round with a cord, to prevent his barking; and the man holds the other end of this cord in his hand. As soon as the dog smells the bear, he begins to show signs of uneasiness, and, by dragging at the cord, informs his master that the object of his pursuit is at no great distance.

When the Laplander, by this means, discovers on which side the bear is stationed, he advances in such a direction that the wind may blow from the bear to him, and not the contrary; for otherwise, the animal would, by his scent, be aware of his approach, though not able to see the enemy, being blinded by sunshine. The olfactory organs of the bear are exquisite. When

the hunter has advanced to within gunshot of the bear, he fires upon him ; and this is very easily accomplished in autumn, as he is then more fearless, and is constantly prowling about for berries of different kinds, on which he feeds at this season of the year. Should the man chance to miss his aim, the furious beast will directly turn upon him in a rage, and the little Laplander is obliged to take to his heels with all possible speed, leaving his knapsack behind him on the spot. The bear, coming up to this, seizes upon it, biting and tearing it into a thousand pieces. While he is thus venting his fury, the Laplander, who is generally a good marksman, reloads his gun, and usually destroys him at the second shot ; if not, the bear, in most cases, runs away.

One of the most remarkable traits in the character of the bear is its propensity for climbing, and the facility with which it accomplishes the feat. It seems almost incredible that an animal so bulky, and apparently so clumsy, should be able to perform such acts. Trees, ladders, and scaffoldings it ascends with the ease and security of the monkey, although not with the monkey's agility. The following anecdote furnishes an amusing illustration of this habit : —

" In 1825, a tame bear took a notion of climbing up the scaffolding placed round a brick stalk, erecting by Mr. G. Johnstone, at St. Rolloy. He began to ascend very steadily, cautiously examining, as he went along, the various joists, to see if they were secure. He at length, to the infinite amusement and astonishment of the workmen, reached the summit of the scaffolding, one hundred and twenty feet high. Bruin had no sooner attained the object of his wishes, than his physiognomy exhibited great self-gratulation ; and he looked about him with great complacency, and inspected the building operations going on. The workmen were much amused with their novel visitor, and every mark of civility and attention was shown him, which he very condescendingly returned by good-humoredly presenting them with a shake of his paw. A lime bucket was now hoisted, in order to lower him down, and the workmen, with all due courtesy, were going to assist him into it ; but he declined their attentions, and preferred returning in the manner he had gone up. He afterwards repeated his adventurous visit."

Not less curious is the manner in which the bear receives and punishes its enemies. Standing erect like a man, with its fore paws extended, it advances fearlessly on its foe, first administering stunning blows with its paws, then, seizing the enemy in a close embrace, proceeds to destroy him, if possible, by suffocation. Man, however, has little to fear from the common bear ; but there are species with which he would find an encounter, even if well armed, a terrible affair, as the following incident will show : —

" As a young man, named Vance, son of Mr. John Vance, of Bear Creek,

Colorado, was going up the canon, he came across a grizzly bear. Upon approaching within a few yards, he fired, when the bear fell. Not being well acquainted with the nature of bears, young Vance advanced for the purpose of despatching him; but the bear, quietly awaiting his approach, arose on his hind legs, and struck the gun from his hands at the moment he was about to fire. The bear immediately gave another blow, and tore open the flesh above Vance's right eye, cutting two severe gashes, and tearing the flesh from the bone. One nail of the bear at the same time caught the nasal bone at its root, and tore a portion of it away, and passing along, tore out the left eye. The bear then commenced hugging, at the same time chewing and lacerating him in a fearful manner. He dislocated his wrist, broke his forearm, and tore the flesh from both hands. He also bit his left knee severely, and cut a frightful gash across the fleshy portion of the limb above, bit through the fleshy part below the knee, and tore both limbs from the knee down to the ankle, and lay down on the young man. After both remaining quiet for some time, the bear moved off, and Vance ventured to get up and make his escape."

In the following incident the bear met with a different sort of foe, and a different fate:—

"Some years since, when the western part of New York was in a state of nature, and wolves and bears were not afraid of being seen, some enterprising pilgrim had erected and put in operation a saw-mill, on the banks of the Genesee. One day, as he was sitting on the log, eating his bread and cheese, a large, black bear came from the woods towards the mill. The man, leaving his luncheon on the log, made a spring, and seated himself on a beam above; when the bear, mounting the log, sat down with his rump towards the saw, which was in operation, and commenced satisfying his appetite on the man's dinner. After a little while the saw progressed enough to interfere with the hair on Bruin's back, and he hitched along a little, and kept on eating. Again the saw came up, and scratched a little flesh. The bear then whirled about, and, throwing his paws around the saw, held on, till he was mangled through and through, when he rolled off, fell through into the flood, and bled to death."

In a state of domestication the bear shows a considerable degree of intelligence and reasoning power. In Wermeland, Mr. Lloyd tells us, large numbers of peasants keep bears, which walk about as familiarly and harmlessly as the house dog. "I heard of one," he says, "that was so tame, that his master, a peasant, used occasionally to cause him to stand at the back of his sledge when on a journey; but the fellow kept so good a balance, that it was next to impossible to upset him. When the vehicle went on one side, Bruin threw his weight the other way, and *vice versa*. One day, however, the

peasant amused himself by driving over the very worst ground he could find, with the intention, if possible, of throwing the bear off his equilibrium, by which, at last, the animal got so irritated, that he fetched his master, who was in advance of him, a tremendous thwack on the shoulders with his paw. This frightened the man so much, that he caused the beast to be killed immediately."

The fondness of the bear for honey is well known, and the animal frequently exhibits a great degree of sagacity in seeking for, and obtaining it. By its powerful olfactories it will scent a tree, where the sweet store is deposited, at a considerable distance. Having found a hollow tree containing honey, it will ascend till it reaches the entrance to the cavity, which it will enter backwards. This peculiar mode of entering the hollow honey-tree was once the means of saving a poor peasant's life in Muscovy. "The countryman, seeking for honey in the woods, mounted a stupendous tree, which was hollow in the centre of its trunk, and, discovering that it contained a large quantity of comb, descended into the hollow, where he stuck fast in the honey,—which had accumulated there to a great depth,—and every effort on his part to extricate himself proved abortive. So remote was this tree, that it was impossible his voice could be heard. After remaining in this situation for two days, and allaying his hunger with the honey, all hope of being extricated was abandoned, and he gave himself up to despair. At last a bear, who, like himself, had come in search of honey, mounted the tree, and descended the hollow cleft, stern forward. The man was at first alarmed, but mustered courage to seize the bear with all the firmness he could; upon which the animal took fright, made a speedy retreat, and dragged the peasant after it. When fairly out of the recess, he quitted his hold, and the bear made the best of its way to the ground, and escaped."

The Indians relate many stories of the attachment and affection of the bear towards human beings, and cite instances where women have been preserved unhurt by its capricious fondness. Considering, indeed, the great strength, sagacity, and intelligence of this animal,—intelligence superior to that of the lion or tiger, and keeping in view also its partly frugivorous habits,—we should naturally expect to find it, at times, manifesting these higher qualities in a greater degree than we should look for in any of the larger felidae, whose habits are entirely carnivorous. The incident referred to by Colonel Charles Hamilton Smith is therefore perfectly credible. "Leopold, Duke of Lorraine, had a bear called Marco, of the sagacity and sensibility of which we have the following remarkable instance: During the winter of 1709, a Savoyard boy, ready to perish with cold in a barn, in which he had been put by a good woman, with some more of his companions, thought proper to enter Marco's hut, without reflecting on the danger which he ran in exposing

himself to the mercy of the animal which occupied it. Marco, however, instead of doing any injury to the child, took him between his paws, and warmed him by pressing him to his breast, until next morning, when he suffered him to depart, to ramble about the city. The young Savoyard returned in the evening to the hut, and was received with the same affection. For several days he had no other retreat; and it added not a little to his joy to perceive that the bear regularly reserved part of his food for him. A number of days passed in this manner, without the servants knowing anything of the circumstance. At length, when one of them came to bring the bear its supper rather later than ordinary, he was astonished to see the animal roll his eyes in a furious manner, and seeming as if he wished him to make as little noise as possible, for fear of awaking the child, whom he clasped to his breast. The bear, though ravenous, did not appear the least moved with the food which was placed before him. The report of this extraordinary circumstance was soon spread at court, and reached the ears of Leopold, who, with part of his courtiers, was desirous of being satisfied of the truth of Marco's generosity. Several of them passed the night near his hut, and beheld, with astonishment, that the bear never stirred as long as his guest showed an inclination to sleep. At break of day the child awoke, was very much ashamed to find himself discovered, and, fearing that he would be punished for his temerity, begged pardon. The bear, however, caressed him, and endeavored to prevail on him to eat what had been brought to him the evening before, which he did at the request of the spectators, who afterwards conducted him to the prince. Having learned the whole history of this singular alliance, and the time which it had continued, Leopold ordered care to be taken of the little Savoyard, who doubtless would have soon made his fortune, had he not died a short time after."

In cold climates the males, and in some species all the females, are disposed to pass the season of cold and snow in a deep slumber, without food. The place of repose may be a cavern, or a cavity under the snow, or a rude hut constructed by the skill of the bear itself. At the close of this period of hibernation, the females produce their young, which are fostered for many days before the mother rises to break out of her retreat. Where hibernation is interrupted by captivity, young bears, especially, are liable to temporary blindness. Colonel Smith relates the following instance: "A young black bear was brought from Quebec late in the autumn; the nictitating membrane, early during the passage home, spread over both eyes, and became fixed, although the animal was as lively as ever, being permitted to go free about the ship; he could, in this state, walk over the sides into the chains, climb up the ropes, and was a full match for the tricks the young midshipmen played him, by retorting occasionally with extraordinary quickness and pre-

cision, greatly damaging their sea-clothes. He trusted entirely to the acuteness of his olfactory sense during the whole period of his blindness, which continued till the last days of February."

The genus *Ursus*, now divided into four sub-genera, is distributed over all the continents and the great Australasian islands; but it is a fact somewhat remarkable, that the species increase in size and strength as they approach the north.

The dentition of this genus consists of six incisors, two canines, and twelve molars above, and six incisors, two canines, and fourteen molars below; the crowns of the molars indicate a decided frugivorous habit. The limbs are high and of great strength; the feet five-toed, furnished with powerful claws, designed, apparently, more for digging and climbing than tearing; the ears roundish, or obtusely pointed; the eyes small; the fur, in cold climates, long and thick; and the tail is always short, sometimes being a mere tubercle or rudiment.

Sub-genus HELARCTOS.—The Sun Bears. There are only two species known, and both are equatorial. They are distinguished by a close, short fur; body long in proportion to their height at the shoulder; ear small and round; muzzle short and broad; lips extensile; tongue very long; a whitish space on the breast, and long, crooked claws. The species best known to naturalists is the

H. Malayanus.—The Bruang. This animal inhabits Sumatra. It is about four feet long and two feet high; the fur glossy black; the face to behind the eyes and lower jaw is buff; on the breast is a large, white crescent, the horns of which are pointed forward; the tail is less than an inch in length. Though very strong, and armed with powerful claws, it is inoffensive and gentle. It is remarkable for its docility and sagacity, feeds on vegetables, and is exceedingly fond of honey and sugar.

H. Euryspilus.—The Bornean Sun Bear. This species differs chiefly in the form of the mark on the breast, which is nearly square, and of a yellowish or orange-color. In manners it is similar to the former, although it stands with more facility on its hind feet, and protrudes its lips into a kind of funnel shape more completely. It has tumbling propensities, however, that seem to ally it to the next group.

Sub-genus PROCHILUS.—Labiated or Tumbler Bear. *Prochilus* differs considerably from the other sub-genera of this family by the irregularity of its dentition. The individuals in all others have forty-two teeth each; but in this group the number varies; it may be thirty-six, twenty-six, or thirty-four. The cartilage of the nose is movable and extensile, and the lips protrudible. The ears are small and pointed; the hair is abundant on the nape

and sides of the neck, and a white crescent marks the breast, but higher up towards the throat than in the sun bears. The only species known is the one described below.

P. Labiatus. — The Bauloo, or Sloth Bear. This is a low-legged, clumsy-looking animal, and yet it will climb trees with more agility than the true bears, and dance and gambol, in its wild state, in the most fantastic manner. It is about three feet six inches in length; is thickly covered with long, black hair, and has a prolonged muzzle, which, with the lips, cheeks, and the crescent-shaped mark beneath the throat, is white. Its delight seems to be to gambol through the wild mountain forests, and sometimes to entertain travellers by preceding them in the road, performing somersets and other mysterious antics, which might excite the envy of the most skilful human gymnast. Johnston, in his "Sketches of India," testifies to the truth of this peculiarity of the species. "Bears will often continue on the road, in front of a palanquin, for a mile or two, tumbling, and playing all sorts of antics, as if they were taught to do so. I believe it is their natural disposition; for they certainly are the most amusing creatures imaginable in a wild state. It is no wonder they are led about with monkeys to amuse mankind. It is astonishing, as well as ludicrous, to see them climb rocks, and tumble, or rather roll, down precipices. If they are attacked by a person on horseback, they stand erect on their hind legs, showing a fine set of white teeth, and make a crackling kind of noise. If the horse comes near them, they try to catch him by the legs; and, if they miss him, they tumble over and over several times. They are easily speared by a person on horseback that is bold enough to go near them."

It is not strange that a creature so full of life and apparent mirth should pine in captivity, and fall into melancholy, especially when alone. Besides the tumbling and rolling propensity, this animal amuses himself with a kind of song. Sitting on his hams, or standing on his hind feet, he places one of his fore paws at the side of his mouth, and chants his strains, which consist of a kind of humming noise. He appears greatly to enjoy his music.

Some travellers, however, ascribe to this bear a sanguinary character of the most terrible kind. It is said that he will surprise a solitary traveller, seize him suddenly by the throat, and bring him to the earth, clinging to his neck, and sucking his blood until every drop is extracted from the veins of the victim. This is fully confirmed by an event which once occurred at a menagerie.

By some unaccountable carelessness the door of the den where one of these animals was kept was left open; and the keeper's wife happening to go across the court at the same time, the animal flew out, seized the woman, threw her down, and fastened upon her neck, which he bit; and without

offering any more violence, lay upon her, sucking the blood out of the wound. Resistance was in vain, as it only served to irritate the brute; and she must inevitably have perished, had not her husband luckily discovered her situation. By a sudden blow, he obliged the bear to quit his hold, and retire to his den, which he did with great reluctance, and not without making a second attempt to come at the woman, who was almost dead through fear and loss of blood. It is somewhat remarkable, that, whenever he happened to see her afterwards, he growled, and made most violent struggles to get at her.

Sub-genus *URSUS*. — The True Bears. These are the typical form of the entire genus, and are the most widely distributed over the globe. Although their cradle appears to be in the colder regions of the north, they are found in South America and Syria, and in the mountains of Thibet and Nepaul. There are numerous species and many distinct varieties, several of which appear not to be well known.

U. Arctos. — The Brown Bear. This species is about four feet in length and two and a half in height. It is a powerful animal, with a large head and prolonged muzzle; the eyes are small, the ears sub-triangular, and partly concealed by a great quantity of brown, shaggy hair. It stands erect, walks on the hind feet, and sits on its hams with great facility. This animal abounds in Norway, Sweden, Lapland, and Denmark, and, notwithstanding its fierceness and strength, a peasant will often encounter it single-handed. For this purpose he arms himself with a long, sharp-pointed knife with a keen edge, and protects his left arm with several folds of bear-skin. When the bear assumes the upright posture, as he always does on the approach of a foe, the hunter, keeping as far off as possible, stabs him suddenly and repeatedly with his long knife, and soon lays the brute at his feet. But alas for the hunter who allows himself to be clawed into the arms of the animal; for in such case he will be sure to be suffocated. This bear exhibits a great deal of shrewdness, and in his struggle with a man, if he can once grasp him with his fore paws, using one of his hind feet in a peculiar manner, he will trip him up, and prostrate him with the skill of a practised wrestler.

The Yellow Bear of Norway and the Black Bear of Sweden are varieties of this species. The latter has a permanent narrow white ring round the neck, and in winter the tips of the hair on the back are white. It is to this bear that Landor alludes in the following anecdote: "A man in Sweden set off one morning to shoot the cock of the woods. This bird is so extremely shy, that he is rarely met with, except in the pairing season, when, every morning, he renews his song. He usually commences just before sunrise, beginning in a loud strain, which gradually sinks into a low key, until he is quite entranced with his own melody; he then droops his

wings to the earth, and runs to the distance of several feet, calling, cluck, cluck, cluck! during which time he is said to be incapable of seeing, so wrapped up is he in his own contemplations, and may be caught even with the hand by those who are near enough, as the fit lasts only a few moments; if unready, wait for the next occasion; for, should he advance a step, except when the bird is insensible, he will certainly be overheard, and the victim escape.

"The man I began to speak of, being, early one morning, in pursuit of this bird, heard his song at a short distance, and, as soon as the clucking commenced, of course advanced as rapidly as he could, and then remained motionless till these particular notes were again sounded. It was quite dusk, the sun not yet having risen; but the song seemed to come from an open space in the forest, from which the sun was just emerging. He could not see many yards before him, and only followed the direction of the sound. It so happened that, from another point, but at no great distance, a bear was advancing on the bird, just in the manner of, and with the same steps as, the man. The hunter, whilst standing motionless, thought he perceived a dark object on one side of him; but it did not much engage his attention; at the usual note, he moved on towards the game, but was surprised to see that the black object had also advanced in an equal degree, and now stood on a line with him. Still, he was so eager after the bird, that he could think of nothing else, and approached close to his prey before he perceived that a large bear stood within a few feet of him; in fact, just as they were about to spring on the bird, they caught sight of one another, and each thought proper to slink back. After having retreated a short distance, the man began to think it would be rather inglorious to yield the prize without a struggle; and there being now more light, he returned to the spot, when it appeared that the bear had also taken the same resolution, and was actually advancing over the same open space I have mentioned, growling and tearing up the grass with her feet. Though the man had only shot in his gun, he fired without hesitation, and immediately took to his heels and fled, conceiving the bear to be close in his rear, and ventured not to pause till he had gained his own habitation. Having armed himself anew, and taken a companion with him, he again repaired to the spot, where he found the bear lying dead on the ground, some of the shots having entered her heart."

U. Collaris. — Siberian Bear. This bear is, in form, quite like the brown bear of Europe, and is nearly allied to the last species described. It derives its specific name from the large white collar which encircles the neck, and extends to the fore part of the shoulders. This animal may, however, be the same as the barren ground bear, mentioned by Professor Richardson, which inhabits those vast uninhabited and wild regions that lie

between the most northern woods and the Arctic Sea of America. This bear has broader soles and a longer tail, and is otherwise larger than the common black. Its prevailing color is dusky, but sometimes it is yellowish-brown; the sides and shoulders are covered with long hairs, which in summer are tipped with white.

The flesh of the above-mentioned species is sweet and palatable, superior to pork, and, in the opinion of the writer, equal to beefsteak.

U. Thibetanus. — Thibet Bear. Found in the mountains of Nepaul and Sylhet. A large, flat head, large ears, thick neck, small claws, and stout limbs, are the distinguishing characters of the species. The color is black, with a white V-shaped spot on the breast.

U. Isabellinus. — Isabella Bear. This is also a variety from Nepaul, of which little is known.

U. Syriacus. — Syrian Bear. The color of this bear is yellowish-white. Its size is about that of the black bear. It is a powerful and ferocious animal, often attacking men and destroying children. The species is now seldom found in Syria, but formerly was a terror to the inhabitants. The bears that destroyed the children who reviled the Hebrew prophet were of this variety. The celebrated Godfrey de Bouillon had an encounter with one, in which he received a dangerous wound.

U. Americanus. — American Black Bear. A narrower head, prominent muzzle, ears more remote, fur long and glossy-black, distinguish this species. Being less carnivorous than the brown bear, it is of milder temper; besides, it is a more active and nimble climber; it does not disdain flesh, but delights in the sweet and tender young corn, when the ears are just filled out. We have seen whole fields broken down by these lovers of green corn.

In illustration of the peculiar instincts of the bear, and the singular caprice to form an attachment for human beings, especially children, we have already recorded several anecdotes. We now add an incident which recently occurred in Michigan, where a bear of this species abducted a little girl about three years old, not with any desire to harm the child, but through a strange kind of affection. Mr. Henry Flynn, the father of the child, lives in a sparsely-settled part of the country, about forty miles west of Ludington, Michigan, and from him this account has been derived. It appears that he started one morning to take a horse to pasture, about two miles distant from the house, and as his little girl seemed anxious to go, he put her upon the horse's back, and let her ride a short distance, perhaps forty rods from the house, where he put her down, and told her to run home. He noticed that she continued standing where he left her, and on looking back after going a little farther, saw her playing in the sand. He soon passed out of

sight, and was gone about an hour, expecting, of course, that the child would return to the house after playing a few moments. On returning home he made inquiry about her of its mother, who said she had not seen her, and supposed he had taken her along with him. On going to the spot where he left her, he saw huge bear tracks in the sand, and at once came to the conclusion that the child had been carried off by the bear.

The family immediately made search through the forest, which was grown up to almost a jungle, rendering their search very slow. All day these anxious parents searched for some trace of their child; nor did they stop when darkness came on, but remained in the woods, calling the lost one by her name. Morning came, and their search was fruitless. A couple of gentlemen looking at land came to the house, and being informed of the circumstance, immediately set out to help find her. The gentlemen wandered about, and as they were passing a swampy spot where the undergrowth was thick, they either called the child, or else they were talking loud, when one of them heard her voice. He then called her by name, and told her to come out of the bushes. She replied that the bear would not let her. The men then crept through the brush, and when near the spot where she and the bear were, they heard a splash in the water, which the child said was the bear. On going to her, they found her standing upon a log, extending about half way across the river.

The bear had undertaken to cross the river on the log, and being closely pursued, left the child and swam away. She had received some scratches about her face, arms, and legs, and her clothes were almost torn from her body, but the bear had not bitten her to hurt her, only the marks of his teeth being found on her back, where, in taking hold of her clothes to carry her, he had taken the flesh also.

The little one says the bear would put her down occasionally to rest, and would put his nose up to her face, when she would slap him; and then the bear would hang his head by her side, and purr and rub against her like a cat. The men asked her if she was cold in the night, and she told them the old bear lay down beside her, and put his "arms" around her, and kept her warm, though she did not like his long hair. She was taken home to her parents.

The Cinnamon and Yellow Bear are regarded by naturalists as varieties of the *U. Americanus*; although Colonel Smith relates that he discovered a considerable difference in character, both moral and mental, as well as physical. The subjects he compared were a black, and Carolina yellow,—the last mentioned being more slender; less covered with fur; the plane of the nose more convex; the muzzle more pointed; and in intelligence more active; for while the black lay down in perfect apathy, and Colonel Smith's attention

was directed to drawing another object, a strong breathing over his shoulder made him turn round, when he perceived that the yellow bear was standing upright behind him, gazing curiously at the drawing on which the colonel was engaged.

It would appear, however, that in the remote regions of the United States, the common black bear is occasionally found not only of a cinnamon color, but sometimes even white. Tanner gives us the following account: "Shortly after this I killed an old she-bear, which was perfectly white. She had four cubs; one white, with red eyes and red nails, like herself, one red, and two black. In size, and other respects, she was the same as the common black bear; but she had nothing black about her but the skin of her lips. The fur of this kind is very fine, but not so highly valued by the traders as the red. The old one was very tame, and I shot her without difficulty; two of the young ones I shot in the hole, and two escaped into a tree.

"I had but just shot them, when there came along three men, attracted, probably, by my gun. As these men were very hungry, I took them home with me, fed them, and gave them each a piece of meat to carry home. Next day I chased another bear into a low poplar tree; but my gun being a poor one, I could not shoot him.

"A few days after, as I was hunting, I started, at the same moment, an elk and three young bears; the latter ran into a tree. I shot at the young bears, and two of them fell. As I thought one or both must only be wounded, I sprang towards the root of the tree, but had scarcely reached it when I saw the old she-bear coming in another direction. She caught up the cub which had fallen near her, and, raising it with her paws, while she stood on her hind feet, holding it as a woman holds her child, she looked at it for a moment, smelled the ball-hole, which was in its belly, and, perceiving it was dead, dashed it down, and came directly towards me, gnashing her teeth, and walking so erect that her head stood as high as mine. All this was so sudden, that I scarce reloaded my gun; having only time to raise it, and fire, as she came within reach of the muzzle. I was now made to feel the necessity of a lesson the Indians had taught me, and which I very rarely neglected; that is, to think of nothing else before loading it again."

U. ornatus. — The Spectacled Bear. This animal inhabits the great mountain range which extends through the whole South American Continent, and is about three feet six inches in length. It is the most beautiful of the bear family. Its characters are a black, shining, and smooth fur; a yellowish muzzle; a semicircle of the same color, rising from the forehead, encompassing the eyes, and a light-colored patch on the throat. The species

has not long been known, and of its peculiar habits nothing has been recorded by naturalists.

U. ferox. — Grizzly Bear. This bear, by the bulk of its limbs, large size of the head, long and powerful claws, immense strength, ferocity, and wonderful tenacity of life, is certainly the most remarkable of the genus, as it is the largest. Lewis and Clark describe one nine feet in length, and weighing eight hundred pounds. Its color is sepia-black, the back grizzled with white, and the limbs shading into absolute black; the ears are large and very hairy; the tail is a mere rudiment. As its claws are not sufficiently curved, it cannot climb trees like the common American bear. According to Mr. Catlin, these animals will not molest a sleeping person; and he describes an instance where one of them walked round him and his companions while sleeping, as its tracks revealed, and then went to their canoe, and made a supper on their provisions. It does not, indeed, seem disposed to attack human beings at all, if not first disturbed. On their approach it will assume an erect posture, show its teeth, and, uttering a menacing growl, retreat. It is easily frightened by certain noises, as the beating of drums and tin pans. But while it stands in awe of man, and flees before him, it is the terror of all other animals, prostrating the largest buffalo at a blow. Its strength is so enormous, that it will drag, with ease, the carcass of the largest bison, weighing from ten to twelve hundred pounds, a considerable distance, to conceal it in some safe place for future meals. It is an expert and swift swimmer, and, often turning upon its pursuers, chases them in the water, where they sometimes seek refuge from its fury.

One evening, the men in the hindmost of one of Lewis and Clark's canoes perceived one of these bears lying in the open ground, about three hundred paces from the river; and six of them, who were all good hunters, went to attack him. Concealing themselves by a small eminence, they were able to approach within forty paces unperceived; four of the hunters now fired, and each lodged a ball in his body, two of which passed directly through the lungs. The bear sprang up, and ran furiously, with open mouth, upon them; two of the hunters, who had reserved their fire, gave him two additional wounds, and one, breaking his shoulder-blade, somewhat retarded his motions. Before they could again load their guns, he came so close on them that they were obliged to run towards the river, and before they had gained it, the bear had almost overtaken them. Two men jumped into the canoe; the other four separated, and, concealing themselves among the willows, fired as fast as they could load their pieces. Several times the bear was struck, but each shot seemed only to direct his fury towards the hunters; at last he pursued them so closely that they threw aside their guns and pouches, and jumped from a perpendicular bank, twenty feet high, into

the river. The bear sprang after them, and was very near the hindermost man, when one of the hunters on the shore shot him through the head, and finally killed him. When they dragged him on shore, they found that eight balls had passed through his body in different directions.

This species inhabits the whole region that lies along the chain of the Rocky Mountains, extending north beyond the latitude of 61° , and south into Mexico.

Sub-genus *THALARCTOS*. — Marine Bears. The nearly amphibious habits of this group, its longer body, lengthened and flattened head, thick and prolonged neck, the large soles of the feet, which are clothed with fur, and an additional conic tooth behind the canines, give it a character very distinct from the foregoing genus. It is clothed with very dense and long fur, silvery-white, tinged with yellow. The claws, which are not much curved, are black, short, and of great strength.

Thalarctos Maritimus. — Polar Bear. A live specimen of this species, which a few years since we had the opportunity of observing, was not far from seven feet in length, and weighed about one thousand pounds. Adapted quite as much to an aquatic life as to an existence on the land, it moves along with an awkward, shuffling gallop when on shore, and yet with a rapidity which rivals the swiftest pace of man. It is expert in diving, and rarely fails to bring up the prey it aims for. The hairy sole, which nature has provided for its feet, prevents it from slipping on the ice, where the males of the species reside entirely during the winter. Sometimes they are carried far out to sea, even as far as Norway and Iceland, where they often land, to the dismay of the natives, who seek to find the means of destroying them. The females spend the winter on the land, under the snow, where, as spring approaches, they produce their young, for which they manifest an extraordinary affection, often exposing and sacrificing their own lives in defence of their cubs; but they are ferocious to all other animals in an equal degree.

The food of the polar bear consists of fish, seals, young whales, the carcasses of dead cetaceæ, and, when pressed by hunger, it will attack the great sea-lion, the walrus, but not often with much success. In illustration of the remarkable attachment of these creatures to their young, an affecting instance is given in "Phipps's Voyages." "Early one morning the ship's crew observed three bears making their way rapidly over the Frozen Ocean, in the direction of the ship, attracted probably by the scent of some blubber of the sea-horse which had been set on fire, on the ice, the day before. As they drew near, they were discovered to be a she-bear and her two cubs. They ran eagerly towards the roasted blubber, which the dam took up piece by piece, and laid it before her cubs, reserving but a small share for herself.

"As she was fetching away the last piece, they levelled their muskets at

the cubs, and shot them both dead, at the same time wounding the dam in her retreat, but not mortally. It would have drawn tears of pity from any but the most unfeeling, to have marked the affectionate concern expressed by this poor animal, in the dying moments of her expiring young. Though she was sorely wounded, and could but just crawl to the place where they lay, she carried the lump of flesh she had just fetched away, as she had done the others, tore it in pieces, and laid it down before them. When she saw they refused to eat, she laid her paws first upon one, then upon the other, and endeavored to raise them up, making, at the same time, the most pitiable moans. Finding she could not stir them, she went off, and when she had got to some distance, looked back and moaned; and that not availingly to entice them away, she returned, and, smelling round them, began to lick their wounds. She went off a second time, as before, and having crawled a few paces, looked again behind her, and for some time stood moaning. But still her cubs not rising to follow, she returned to them anew, and, with signs of inexpressible fondness, went round, pawing them successively. Finding, at last, that they were cold and lifeless, she raised her head towards the ship, and growled a curse upon the destroyers, which they returned with a volley of musket-balls. She fell between her cubs, and died licking their wounds."

AMPHIBIA.

The term *amphibious* is of Greek derivation, and literally designates an animal which can live equally in two elements, that is, in air and water; and, until a recent period, it was generally believed that the large and interesting family we are about to describe was endowed with a breathing apparatus, which could be exercised with equal ease in both elements. This belief, however, is proved to be erroneous, inasmuch as the amphibious mammalians cannot breathe in the water at all, but are obliged, at frequent intervals, to come to the air, where they respire in a manner in no way differing from that of strictly terrestrial animals. Naturalists, therefore, now employ the word in a broader sense, and apply it to that portion of the Carnivorous Order, which has adaptations to a life both in the sea and on the land. But while it is true that the amphibians breathe in the same manner as other animals, there is a difference in the frequency of the respirations. Some mammalians breathe twenty times a minute, whereas many of the amphibious tribes will not breathe once during that length of time. No satisfactory reason has yet been given to explain the difference, nor any cause discovered to account for their power to remain so long under the water without respiring.

The natural history of the Amphibious Carnivora is extremely interesting. The remarkable intelligence, curious and mysterious habits, capability of attachment, extraordinary affection for their young, and monstrous size of many of these creatures, elicit our admiration and excite our wonder. Notwithstanding their awkward and unwieldy forms, they far surpass most of the land mammals in moral and mental attributes, approaching, if not quite equalling, the superior species of the canine race.

The later British naturalists have divided the amphibians into two families, — the *Enhydriæ*, or otters, and the *Phocidæ*, or seals, which we now will proceed to describe, introducing, as we advance, such particulars regarding the habits, and mental and moral characters of these animals, as we may judge the most instructive and entertaining to the reader.

Family 1. THE ENHYDRIÆ. — The Otters. In form and dentition, the members of this group approach the *Mustelidæ*; but their feet are distinctly webbed; the skull resembles that of the seal; eyes, submarine; movements constrained on the land, but rapid and easy in the water, where they mostly reside.

Genus *LUTRA*. — River Otters. Musteline dentition, body very long, tail also long, powerful, depressed, tapering, fur close, head depressed, eyes large, plane, small ears, and an anal scent-bag, are the most marked characters of the genus. By the peculiar arrangement of the upper lip, which covers the lower, and a layer of fat under the skin, it approximates the seal.

L. Leptonyx. — Java Otter. This species resides in shoal water, dives and swims with less power than others of the group, and consequently more frequently seeks the land. The fur is brown and soft, with the lips, cheeks, throat, and breast whitish.

L. Capensis. — Cape Otter. This animal inhabits the salt lagoons and rivers of the cape, especially those that are apt to dry, and leave only holes of deep water. It has a soft, thick fur, chestnut-brown, deepest on the upper after parts; brownish-gray on the head, and below, white.

L. Vulgaris. — The Common Otter. The color of this species is brown, the head sometimes whitish; it is from twenty-five to forty-two inches in length, and weighs from twenty to forty pounds. On the land it runs with difficulty, but swims and dives with great vigor; lurks under sedgy banks, beneath the roots of trees, and in holes, where the remains of dead fish are deposited, upon which it almost exclusively feeds. It is a great lover of fish, although sometimes it makes incursions into the country, and devours young lambs. The common otter inhabits the whole of Europe, and extends into Northern Asia, eastwards, to an unknown distance.

L. Roensis. — The Irish Otter. This is considered a distinct species, chiefly on account of its very dark fur, and residence in salt water. It inhabits the coasts of Cornwall and Devon.

L. Canadensis. — The Canada Otter. This animal is much larger than the common, being nearly five feet in length. It dwells in the lakes and all the affluents of the St. Lawrence, and probably to a considerable distance southward.

L. Nair. — Indian Otter. This is probably identical with the *L. Indica*. The color is of a deep chestnut; the cheeks, and lower part of the neck and throat, bright reddish-brown; and above the eye is a yellowish-white spot. The Indian otters are domesticated by the natives, and kept in packs of ten or twelve, and made to serve them in fishing, which they do by driving the fish into nets.

In addition to the above, naturalists mention the *L. Chilensis*, *L. Californica*, *L. Chinensis*, *L. Barang*, *L. Braziliensis*, and seven species in Nepaul, all of which are distinguished by nearly the same habits, and exhibit the same peculiar instincts, which we are about to notice.

The Spanish traveller, Azara, describes a South American species of smaller dimensions, living together in large societies, for the purpose of fishing, and occasionally wandering on the land.

All the otters, in a degree, exhibit the same curious traits of character, some of the most extraordinary of which are their strong affection for their young, — an affection almost human in its intelligence, depth, and tenderness — their capability of domestication, and the mysterious attachment they manifest towards their masters. There is something awful, and almost supernatural, in the look of unutterable confidence and pleading affection which these brutes fasten upon the face of their protectors, and we wonder not that rude people have believed that the bodies of these and other amphibians were inhabited by the spirits of lost nations.

The females produce from four to five at a birth. Their parental affection is so powerful, that they will frequently suffer themselves to be killed rather than quit their progeny; and this has frequently been the occasion of their losing their lives, when they might otherwise have escaped.

Professor Steller says, "Often have I spared the lives of the female otters whose young I took away. They expressed their sorrow by crying like human beings, and followed me as I was carrying off their young ones, which called to them for aid with a tone of voice which very much resembled the wailing of children. When I sat down in the snow they came quite close to me, and attempted to rescue them. On one occasion, when I had deprived an otter of her progeny, I returned to the place eight days after, and found the female sitting by the river, listless and desponding. She suffered me to kill her on the spot, without making any attempt to escape. On skinning her, I found she was quite wasted away, from sorrow for the loss of her young. Another time I saw, at some distance from me, an old

female otter sleeping by the side of a young one about a year old. As soon as the mother perceived us she awoke the young one, and tried to entice him to the river; but, as he did not take the hint, and seemed to prolong his sleep, she took him up in her fore paws, and plunged him into the water."

The otter is naturally ferocious; but when taken young, and properly treated, it can be rendered tame, and taught to catch fish, and fetch them to its master. James Campbell, near Inverness, procured a young otter, which he brought up and domesticated. It would follow him wherever he chose; and, if called by its name, would immediately obey. When apprehensive of danger from dogs, it sought the protection of its master, and would endeavor to spring into his arms for greater security. It was frequently employed in catching fish, and would sometimes take eight or ten salmon in a day. If not prevented, it always made an attempt to break the fish behind the anal fin, which is next the tail; and, as soon as one was taken away, it always plunged in, in pursuit of more. It was equally dexterous at sea-fishing, and took great numbers of young cod, and other fish there. When tired, it would refuse to fish any longer, and was then rewarded with as much as it could devour. Having satisfied its appetite, it always coiled itself round, and fell asleep; in which state it was generally carried home.

It appears that the otter, in its native haunts, is of a playful and sportive humor. We are told that on the banks of the northern rivers, where they dwell unmolested, they may be sometimes seen sliding down the soft, muddy banks into the water, like a parcel of boys coasting upon the snow. They become quite animated with the sport, seeming to emulate each other in the vigor and frolic of their performances.

Sub-genus ENHYDRA. — The characters of this group are six incisors above, and only four below, all very sharp, body very long, no anal scent-bag, tail shorter than the hind legs when stretched out, head rather small and round, ears straight and conical, eyes large, with a nictitating membrane covering more than the anterior half of the ball, and articulations of the hind quarters resembling those of the seal. The species live almost exclusively in the water, never leaving the rocks which border on the sea.

Enhydra Marina. — The Sea Otter. The total length of this animal is about four feet; the fur is fine and close, and of a shining sepia, partially grizzled with white, or of a rich chestnut-brown; and the head is liable to be whitish, as also the abdomen and feet. It inhabits the Northern Pacific, frequenting the coast of Behring's Island, Kamtschatka, the Aleutian Islands and all the region through the latitudes of from 49° to 60° north, and longitudes from 126° to 150° east. It is a bold and powerful swimmer, excelling all the amphibians in this respect, often venturing as far as three

hundred miles from land. The sea otters are social in their habits, and large troops of them are often seen far at sea, frolicking on the wave, and are often discovered in an erect posture, curiously looking about, and shading their eyes, as men do, in order to see with more distinctness.

This species is, without doubt, the sea ape, of which Steller speaks, and the *Simia Marina*, of Swainson. The latter says: "In the circle of the Ferae, the natatorial type is represented by the seals, and the corresponding type of the quadrupedal is at present assuredly wanting. Whatever its precise construction may, or might have been, a resemblance to the monkeys must be considered an essential character of any marine animal which is to connect and complete the circular series of types in the quadrupedal. That some such creature has really been created, we have not a shadow of a doubt."

Mr. Steller saw on the coast of America a very singular animal, which he calls a sea ape. It was five feet long; the head was like a dog's; the ears were sharp and erect, and the eyes large; there was on both lips a sort of beard. The form of its body was thick and round, being thickest near the head, and tapering to the tail, which was bifurcated, and the upper lobe was the longest; the body was covered with thick hair, gray on the back, and red on the belly. It was full of frolic, and played a thousand monkey tricks, sometimes swimming on one side and sometimes on the other of the ship, looking at it with great amazement. It would come so near that it might be touched with a pole; but if any one stirred, it would immediately retire. It often raised one third of its body out of the water, and stood erect for a considerable time; it then suddenly darted under the ship, and appeared in the same attitude on the other side; and it would repeat this movement thirty times together. It would frequently bring up a sea-plant, not unlike a bottle-gourd, which it would toss about and catch again in its mouth, playing numberless fantastic tricks with it.

There is no question that this frolicsome animal, called by Steller the sea ape, was nothing more nor less than the great sea otter, in one of its playful moods.

The Aleut Islanders show a wonderful dexterity in the capture of this animal. In April or May they assemble at an appointed spot, in their light skin-boats, or *baidars*, and choose one of the most respected *tamols*, or chiefs, for the leader of the expedition, which generally numbers from fifty to a hundred boats. Such hunting parties are annually organized from the Kurile Islands to Kadjack, and consequently extend over a line of three thousand miles. On the first fine day the expedition sets out, and proceeds to the distance of about forty miles from the coast, when the *baidars* form into a long line, leaving an interval of about two hundred and fifty fathoms from boat to boat, as far as a sea otter diving out of the water can be seen.

When the number of boats is greater, the intervals are reduced. Every man now looks upon the sea with concentrated attention. Nothing escapes the penetrating eye of the Aleut; in the smallest black spot appearing but for one moment over the surface of the waters his experienced glance at once recognizes a sea otter. The *baidar* which first sees the animal rows rapidly towards the place where the creature dived; and now the Aleut, holding his oar straight up in the air, remains motionless on the spot. Immediately the whole squadron is in motion, and the long, straight line changes into a wide circle, the centre of which is occupied by the *baidar* with the raised oar. The otter, not being able to remain long under water, reappears, and the nearest Aleut immediately greets him with an arrow. This first attack is seldom mortal; very often the missile does not even reach its over-distant mark, and the sea otter instantly disappears. Again the oar rises from the next *baidar*; again the circle forms, but this time narrower than at first; the fatigued otter is obliged to come oftener to the surface; arrows fly from all sides; and finally the animal, killed by a mortal shot, or exhausted by repeated wounds, falls to the share of the archer who has hit it nearest to the head. If several otters appear at the same time, the boats form as many rings, provided their number be sufficiently great. All these movements are executed with astonishing celerity and precision, and amidst the deepest silence, which is only interrupted from time to time by the hissing sound of the flying arrows.

Family 2. THE PHOCIDÆ. — Seals. Of all the groups of animals that inhabit the ocean, in whole or in part, the seals offer the greatest variety, and, at the same time, the most remarkable unity of character. From the small animals that sport in tropical seas, we observe a gradual increase in size as we approach the poles, either north or south, where the members of the family assume gigantic proportions, surpassing in bulk the largest of the terrestrial mammalia. The numerous physical differences exhibited by various members of the family have caused their classification in several genera, and these again are divided into a great number of species. We shall adopt the arrangement, and give the results of the researches, of the latest naturalists, although, from the confusion that prevails in the works of the most reliable authors who have written on the subject, we infer that much is yet to be learned in regard to the natural history of the Phocidæ. Probably in some instances several species are enumerated, which are, in fact, the same animal seen under different circumstances by travellers, and recorded by them as distinct.

But while the members of this family differ so materially in size and other physical characters, they all appear to possess the same moral and mental characteristics. An extraordinary sagacity, and a capacity for domestic and

social enjoyment, and a corresponding capability for feeling sorrow and grief when these enjoyments are intercepted, distinguish all of the species. They are all equally sportive and frolicsome, enlivening the seas and regions which they inhabit with their fantastic gambols. Captain Scoresby, in his "Arctic Regions," thus records his observations on this point: "When coming to the surface to respire, the seals often raise their whole bodies out of the water; their progress is pretty rapid, their action appears frisky, and their general conduct is productive of amusement to the spectator. The sailors, when they discover such a shoal, call it a 'seal's wedding.'"

These animals appear naturally to repose confidence in man; and when a young seal happens to stray from the protection of its parent, and by accident meets with a man, it will follow him with wistful looks, as if asking for his assistance and care. In illustration of this mysterious instinct, which seems to attract them to human beings, a traveller in Scotland relates the following interesting incident: "A little islet in Orkney had long been a favorite haunt of numerous seals, which had become more than usually tame from the care of the proprietor of the adjoining island to prevent their being molested. On visiting that gentleman, I found the seals exhibited their wonted confidence in those who approached their protected haunt. Several of them swam along the shore, as a party of six or eight persons walked along the beach, and did not generally keep farther from us than thirty or forty yards: when we turned, so did they, and when we reentered our boat, they followed it for a considerable distance."

The missionary Cottaneo ascribes a similar character to the seals of the southern hemisphere. "Near the Island of Lobos, in the River Plata," he says, "sea wolves appear in vast multitudes; they meet the ship, and will even hang to the sides by their paws, and seem to stare at and admire the crew."

Another interesting account of the confiding nature of the seal is furnished by the Rev. Mr. Dunbar, of Scotland. "While my pupils and I were bathing, which we often did, in the bosom of a beautiful bay in the island, numbers of these creatures invariably made their appearance, especially if the weather was calm and sunny, and the sea smooth, crowding around us at the distance of a few yards, and looking as if they had some kind of a notion that we were of the same species, or at least genus, with themselves. The gambols in the water of my playful companions seemed to excite them, and make them course round us with greater rapidity and animation."

The naturalist Low also says, "If people are passing in boats, the seals often come close up to them, and stare at them, following for a long time together; if people are speaking loud, they seem to wonder what may be

the matter. The church of Hoy is situated near a small sandy bay, much frequented by these creatures ; and I observed, when the bell rang for service, all the seals within hearing swam directly for the shore, and kept looking about them in wonder and surprise as long as the bell rang."

We are not surprised, therefore, that a creature possessing the character above described should be capable of attachment and domestication. We have often witnessed examples of this kind, although all the species are not equally susceptible in this respect. Several of the species, if taken young, — remarks an intelligent author, — are easily domesticated, when they assume the habits of a dog, showing attachment to their masters, and delight to warm themselves at the fireside.

Mons. F. Cuvier—*"Mammifères, Livrais, Mai, 1824"*—remarks, "I have lately had occasion to witness a seal which displayed much intellectual power. He did promptly what he was ordered. If desired to raise himself on his hind legs, take a staff in his hand, and act the sentinel, he did so ; he likewise, at his keeper's bidding, would lie down on his right side, or on his left, and tumble head over heels. He would give you either of his paws when desired, and extend his sweet lips to favor you with a kiss. He complied immediately with the wishes of his master, to whom he appeared to be peculiarly attached."

We, indeed, have, on several occasions, witnessed similar exhibitions. A few years since, some domesticated seals were exhibited in Boston, which performed a great number of amusing tricks : they would salute the spectator with a bow, and stand upright and play the hand-organ.

The following account we find in "Anecdotes of the Animal Kingdom : "

"Some years ago a seal was so completely domesticated, that it remained with a gentleman, whose residence was but a short distance from the sea, without attempting to escape. It knew all the inmates of the family, and would come to its master when he called it by its name. It was usually kept in the stable, but was sometimes permitted to enter the kitchen, where it seemed to take great delight in reposing before the fire. It was taken to the sea every day, and allowed to fish for itself, in which it was very dexterous ; but when unsuccessful, fish was bought for it. When tired of swimming, it came up to the boat, holding up its head to be taken in."

"A farmer in Fifeshire, Scotland, while looking for crabs and lobsters among the rocks, caught a young seal about two feet and a half long, and carried it home. He fed it with pottage and milk, which it ate with avidity. He kept it for three days, feeding it on this meal, when, his wife being tired of it, he took it away, and restored it to its native element. He was accompanied by some of his neighbors. On reaching the shore, it was thrown into the sea ; but, instead of making its escape, as one would have expected,

it returned to the men. The tallest of them waded to a considerable distance into the sea, and, after throwing it as far as he was able, speedily got behind a rock, and concealed himself; but the affectionate animal soon discovered his hiding-place, and crept close up to his feet. The farmer, moved by its attachment, took it home again, and kept it for some time."

Seals are said to be delighted with music. Mr. Laing, in his account of a voyage to Spitzbergen, mentions that the son of the master of the vessel in which he sailed, who was fond of playing on the violin, never failed to have a numerous auditory when in the seas frequented by seals; and they have been seen to follow a ship for miles, when any person was playing on the deck.

It is a common practice in Cornwall, England, for persons, when in pursuit of seals, as soon as the animal has elevated its head above water, to halloo to it till they can approach within gun-shot, as it will listen to the sound for several minutes.

"The fondness of these animals for musical sounds is a curious peculiarity in their nature, and has been to me," remarks Mr. Dunbar, "often a subject of interest and amusement. During a residence of some years in one of the Hebrides, I had many opportunities of witnessing this peculiarity, and, in fact, could call forth its manifestation at pleasure. In walking along the shore in the calm of a summer afternoon, a few notes of my flute would bring half a score of them within thirty or forty yards of me; and then they would swim about with their heads above water, like so many black dogs, evidently delighted with the sounds. For half an hour, or, indeed, for any length of time I chose, I could fix them to the spot; and when I moved along the water-edge, they would follow me with eagerness, like the dolphins, who, it is said, attended Arion, as if anxious to prolong the enjoyment. I have frequently witnessed the same effects when out on a boat excursion. The sound of the flute, or of a common fife, blown by one of the boatmen, was no sooner heard than half a dozen would start up within a few yards, wheeling round us as long as the music played, and disappearing, one after another, when it ceased."

This singular taste for music is by no means confined to British seals. We have, on several occasions, observed the same peculiarity on the coast of Massachusetts, particularly in the quiet bays which indent the South Shore. At one time, in Hingham harbor, a hand-organ sent forth its strains over the water, when a troop of seals started up, and whirled round, apparently in the highest state of enjoyment, stopping at times, resting upright on the wave, and observing the spectators with the greatest interest and gravity.

All the species show great sagacity in guarding against sudden attacks

from their numerous and powerful foes. We are informed by Denis that seals, on landing, always place a sentinel, and Scoresby says they are extremely vigilant. "Where numbers of them are collected on the same piece of ice, one, if not more, is always looking round, and even a solitary seal is scarcely ever seen to allow a moment to pass without raising its head. Where seals rest on an extensive sheet of ice, they always secure their retreat, either by lying near the edge, or by keeping a hole in the ice always open before them. These precautions are necessary to prevent them becoming a prey to the *U. marinus*, or Polar Bear. The old animals are generally sly, so that when thousands are seen within the compass of a square furlong, on the approach of a boat the whole will perhaps make their escape. The young ones are less guarded, and when met with at the proper season may sometimes be killed by the dozen at a time, on a small flake of ice."

Although these animals never assault man, but rather seek his companionship and friendship, yet they find in him their most persistent and cruel foe; and when attacked by him, many of the species exhibit a heroism, and courage, and skill in defence, of the most remarkable character. The illustrious Scotch novelist, Sir Walter Scott, presents a case in point. "The seal, finding her retreat intercepted by the light-footed soldier, confronted him manfully, and having sustained a heavy blow without injury, she knitted her brows, as is the fashion of the animal when incensed, and making use at once of her fore paws, and her unwieldy strength, wrenched the weapon out of the assailant's hand, overturned him on the sand, and scuttled away into the sea, without doing him any further injury, carrying with her the stick of her antagonist, as a trophy of her triumph." Many of the larger species often have terrible encounters with the Polar Bear, and the Northern Sea resounds with their bellowing, and is dyed with their blood; the seals, however, are, in general, victorious.

It is a most wonderful fact, and one which may profitably engage the attention of philosophers, that while this animal is removed so far from man by physical configuration, it approaches him, in some of the higher mental and moral qualities, more nearly than any other species. When man is enfeebled by age, and feels his grasp on life becoming looser every day, the events of his childhood and early youth crowd his memory, and his heart yearns to behold again the place of his birth. So with the seals; when they feel their end drawing near, they proceed inland, guided by an extraordinary intelligence, till they come to the very place — some sequestered spot among the rocks — where they drew their first breath, and enjoyed the maternal caress; and there they take their leave of life, stretch themselves on the earth, and patiently await the approach of death. What philosophy can

explain this phenomenon? Are all the events of their seal-life woven together in the mysterious web of memory, and do their earliest affections survive to awaken, with renewed strength, as the hour of death overtakes them? Who can say what processes of thought are revolving in the senso-riums of these creatures, as, worn out by disease or age, they shuffle along through this solemn pilgrimage, to yield up their lives on the spot where they first saw the light and knew a mother's care?

Not less wonderful and mysterious is the capacity with which they are endowed to express the emotions of grief and sorrow, by weeping after the manner of human beings. Steller, in his very interesting description of the Ursine Seal, or Sea Bear, mentions this peculiarity: "The males show great affection for their young, but are sometimes tyrannical towards their females. They are fierce in protecting their offspring, and should any one attempt to take their cub, they stand on the defensive, and the mother carries it off in her mouth. Should she happen to drop it, the male instantly quits the enemy, falls on her in a furious rage, and, notwithstanding her piteous moans and pleading cries, beats her against the stones, until she is apparently dead. As soon as she recovers, she crawls to his feet in the most suppliant manner, and bathes them with her tears, whilst he keeps stalking about, altogether like a human tyrant, in the most insolent manner; but if the young one is carried off and lost, his hardihood gives way: with convulsive sobs he casts himself upon the ground, and floods of tears roll down his cheeks, bearing witness to the depth and sincerity of his sorrow.

The products of the seal—the oil and skins—have long been important articles of commerce. On Captain Cook's return, in the *Resolution*, A. D. 1771, he presented an official report, concerning New Georgia, wherein he gave an account of the Proboscis and Fur Seals, which he had found in great numbers on the shores of that island. This report gave a new impulse to seal fishing, and much capital was invested in fitting out vessels to prosecute the business. Captain Weddell states that, during a period of fifty years, not less than twenty thousand tons of oil were procured annually from New Georgia alone, for the London market,—a quantity which, at a moderate price, would yield about five million dollars a year.

Captain Scoresby, to whom we are indebted for much information on this subject, states that the Esquimaux have a process by which they render the skins water-proof, and the jackets and trousers made of them by these people are in great request among the whale-fishers, for preserving them from oil and wet. But the skins are not only used in this raw and tanned state as leather; they constitute still more important articles of trade, on account of their downy and silky covering. The different species, however, are not all clothed alike, some producing hair-skins, and some fur-skins. The

former are used for clothing and ornament by the Russians, Chinese, and other nations, and the latter yield a fur which exceeds in value all others that have been brought into the market. Many seals supply nothing but hair, whilst others, in different proportions, produce both the hair, and underneath it a soft and downy fur. The majority are to be considered merely hair-skins, similar to those of bears and sables; and of these some are excellent in their kind, and are much sought after. But the fur-skins are the most highly prized. The time has been when these skins were sold for five or six dollars apiece in China, and the present price in Europe averages from eight to ten dollars per skin. The number brought from New Georgia alone cannot be estimated at less than twelve hundred thousand; the Island of Desolation has been equally productive; and in addition to the vast sums of money, which these creatures have produced, it is calculated that several thousand tons of shipping have annually been employed in the traffic.

The Americans and English have monopolized almost exclusively the business of seal-fishing in the Southern oceans, and employ therein a large number of vessels, varying from two hundred and fifty to three hundred tons' burden. They are strongly built, and have each six boats, like those of the whalers, together with a small vessel of forty tons, which is put in requisition when they reach the scene of their operations. The crew consists of about twenty-four hands. The ship is usually moored in some secure haven or bay, and partially unrigged, whilst the furnaces and apparatus required for making the oil are placed on shore. The little cutter is then rigged and manned with about half the crew, who sail around the neighboring islands, and send a few hands when they see seals, or where they wish to watch for them. This vessel can hold about two hundred of them, cut up, which will yield nearly one hundred barrels of oil. The expedition frequently lasts for three years, and in the midst of unheard-of privations and dangers. Some of the crew are sometimes left on distant, barren spots, and others being driven off by storms, are left to perish, and drag out for years a most precarious and wretched existence.

Seal-fishing is successfully prosecuted on the coast of Newfoundland. This island intercepts many immense fields of ice, which, in the spring, move south from the Arctic Sea. "The interior parts, with the openings or lakes interspersed, remain serene and unbroken, and form the transitory abodes of myriads of seals. In the month of March, upwards of three hundred small vessels, fitted out for the seal-fishery, are extricated from the icy harbors on the east coast of Newfoundland; the fields are now all in motion, and the vessels plunge directly into the edges of such as appear to have seals upon them; the crews, armed with heavy bludgeons, there *land*, and in the course of a few weeks destroy nearly three hundred thousand of these ani-

mals. The Greenland winter, it would appear, is too severe for these luckless wanderers, and when it sets in, they accompany the field ice, and remain on it until it is scattered and dissolved. Old and young being then deserted in the ocean, nature points out to them the course to their favorite icy haunts, and thither their herds hurry over the deep to pass an Arctic summer. Winter returns, and with it commences again their annual pilgrimage from latitude to latitude.

But whilst the products of the seals are sought by civilized nations, chiefly as articles of luxury, to the rude peoples of the north they are objects of supreme necessity, their all in all. The seal is their sole source of subsistence. Crantz says, "The seals are more needful to them than sheep are to us, though they supply us with food and raiment, or than the cocoa-tree to the Indian, although it presents him with meat and clothing, houses and ships, so that, in case of necessity, they could live upon them alone. The seal's flesh supplies the denizens of those icy regions with palatable and substantial food; the fat is sauce to their other aliment, and furnishes them oil for light and fire, while at the same time it contributes to their wealth in every form, as they barter it for all kinds of necessaries. They sew better with the fibres of seals' sinews than with thread or silk; of the fine internal membranes they make their body raiment and their windows; of the skins they make their buoys, so much used in fishing, and many domestic utensils; and of the coarser kinds, their tents and boats of all sizes, in which they voyage and seek provisions: therefore no man can pass for a right Greenlander who cannot catch seals. This is the ultimate end they aspire to in all their device and labor, from their childhood up. It is the only art—and, in truth, it is a difficult and dangerous one—to which they are trained from their infancy, by which they maintain themselves, make themselves agreeable to others, and become beneficial members of society."

It is an ungrateful and disagreeable task to describe the various means which men employ to destroy these inoffensive and interesting creatures. When we consider their wonderful sagacity, their confiding and affectionate nature, their amazing sensibility, and the moral and mental characters—almost human—which distinguish them, we can scarcely be prevented from regarding the killing of one a *quasi* murder.

There are various methods of capturing and destroying the seals, but among civilized nations the following one is the most commonly adopted. A lance, twelve or fifteen feet in length, the blade of which is about two feet long, is used for the larger species. With great address the seal-catchers seize the moment when the animal raises his left fore paw to advance, and plunge their weapon to the heart. Scoresby tells us that the

capturing of a seal is but the work of a moment. A blow with a *seal-club* on the nose immediately stuns it, and affords an opportunity of arresting the flight, and making prize of many at a time.

When the hunters observe the seals making their escape into the water, while the boat is yet distant from the ice-field, they give a loud and long-continued shout, by which unusual noise the poor creatures are so bewildered that they delay their retreat, and fall easy victims to the blows of their relentless pursuers.

The hyperborean tribes have three modes of catching seals: either individually in a boat, or in company, by what the Greenlanders call the *clapper-hunt*, or, in winter, on the ice. Speaking of the Greenland seal, Crantz says it is a stupid animal, and the only one the Greenlander, when alone, will venture to attack. This he does in his kajak, which is shaped like a weaver's shuttle. When he spies a seal, he tries to surprise it unawares, with the wind and sun in his back, that he may not be heard or seen. He makes hastily, but softly, towards it, till he reaches within four or six fathoms. He then takes hold of the oar with his left hand, and the harpoon with his right, and so throws it at the seal. The moment the instrument is fixed, the Greenlander must throw the attached buoy on the side where the animal dives, which it does instantly like a dart. The seal often draws the buoy along with it under, and thus so fatigues itself that it must soon come to the surface again to take breath. The hunter now hastens to smite it with his long lance, and keeps darting at it till it is quite exhausted, when he kills it outright with his small lance, and then blows it up like a bladder, that it may swim more easily after his kajak. In this exercise he is exposed to the greatest peril of his life; for if the line should entangle itself, or if the seal should turn suddenly to the other side of the boat, it cannot be otherwise than that the kajak must be overturned, and drawn down under water.

Crantz also furnishes a lively and graphic description of the *clapper-hunt*, which is prosecuted by the natives in concert. As soon as they discover a herd, driven usually by stormy weather into some creek or inlet, they endeavor to cut off the retreat of the animals, and frighten them under water by shouting, clapping, and throwing stones. As, however, the seals must speedily come to the surface to breathe, they persecute them again till they are tired, and at last are obliged to stay so long above water that they are surrounded and killed by long and short lances.

Pallas gives an account of another method of deluding and destroying these animals. "At Zivovia we met a number of people going a seal-hunting. This fishery is farmed out, and is pursued chiefly in April. They congregate in numbers in winter, in the neighborhood of rapid rivers and

hot springs, where the ice is broken, to which spots they resort, and bask or sleep in the sun. The hunters are quite familiar with these places, and put themselves into slight sledges, on which they hoist a white sail. The seals, taking this for a floating island of ice, are not alarmed, and approach. They are thus surprised and shot, and many of them are captured."

The Greenlanders adopt still another plan, hunting the seal on the ice, through which these creatures frequently break holes for the purpose of breathing. Near this hole the hunter seats himself on a stool, protecting his feet from the cold ice by a seal skin, or some other substance, and waits. "When the seal comes and puts its nose at the hole, he pierces it instantly with his harpoon, then breaks the hole larger, draws the seal out, and kills it." Sometimes, again, if the hunter sees a seal lying near its hole upon the ice, he slides along on his belly towards it, wags his head and grunts like a seal, and the poor animal, thinking it is one of its innocent companions, lets him come near enough to pierce it with his long lance.

It is by no means an agreeable task to describe the different methods devised by man to effect the destruction of an animal so trustful and harmless, and which, by so many traits of character, solicits our sympathy and forbearance; still less pleasant is it to reflect that sailors often forget their own manhood, and sport with the dying agonies of these creatures, and kill them out of pure wantonness, although they plead for pity, with cries and tears, as if they were endowed with the sensibilities of human beings.

We now proceed to describe such of the genera and species as will offer to the reader the most comprehensive view of the characters and peculiarities of the whole group.

The Phocidae are ranged by naturalists in two divisions: the Phocæ, or True Seals, which are destitute of external ears, and the Otaries, which are furnished with these organs. The True Phocæ, which we shall first consider, have no external ears; their feet are enveloped in the integuments, and formed for swimming; the anterior very short, and the posterior in a line with the body; the incisors, intended for cutting merely, vary from six to four in the upper jaw, and from four to two in the lower; the molars are furnished with small cutting points; the toes are webbed, and armed with sharp claws.

Genus CALOCEPHALUS. The generic name, which designates the species we are about to describe, is a compound Greek word, signifying a beautiful head, and is applied to the animals of this genus on account of the great size of the cranium and shortness of the snout. Their brain is equal in size to that of the highest order of monkeys, hence their great intelligence and capacity for domestication. The nostrils do not extend beyond the mouth, and the mammae of the females are four.



Gazella subgutturosa



Capra ibex

C. Vitulinus. — The Common Seal. The characters of this species consist, according to Professor Nilsson, — 1st, in the oblique position of the molar teeth along the jaw; 2d, in the posterior margin of the palate being deeply notched; and 3d, in the external process of the nasal bone being elongated and rounded, whilst the inner is not much more than half the length of the former, and with its fellow makes a small triangle.

The Common Seal often exceeds six feet in length, and the various colors and markings of the animals have caused them to be separated into several distinct varieties, as the common seal of the French coast, — "Le véritable veau marin" of F. Cuvier, — and the common seal of the Scottish coast. The specific name, *vitulinus*, is given to the common seal on account of the inharmonious accents of its voice. The species is widely distributed, abounding in all the northern seas, from Spitzbergen and Greenland to the mouth of the Scheldt, and from the White Sea to the eastern coast of America, and also in the Antarctic waters.

The best description of this species which we have been able to find is that of Albinus, who says of a seal that had been sent to him for examination, "It measured six and a half feet from the mouth to the termination of the posterior extremities. It had no external auricles, and the foramina leading to the organ of hearing were very small. At the inner angle of the eye was a third eyelid, which could easily be drawn over the whole eye, — an apparatus which appears frequently supplied to those animals in which the eyelids are used not only as a covering, but more especially as a defence from external danger. A few hairs went to form something like eyebrows. The nostrils were large, lunate, and easily opened. The upper lip was much and roundly prominent, with whiskers like those of the cat; the hairs were not very numerous, of a white color, rather long, like bristles, hard and horny, yet flexible. The tongue was long, and round at the tip, but somewhat sulcated at the upper part, so as to appear double. The hair was generally short, slender, and smooth, covering the whole of the body and extremities. The color was verging to tawny, and the whole body was studded with a number of dark spots, the tints being paler on the belly and chest. The tail and posterior extremities were wholly brown, without any spots, except at the origin of the fingers, where there were a few tawny markings; the same observations apply to the fore paws."

These animals produce their young about midsummer. They are usually brought forth in caves, and very shortly after are taken to the sea by the mother, to be taught the art of swimming.

In the Western Islands the seals often attain the weight of over two hundred pounds, and swim with great rapidity, darting through the water at the rate of six or eight miles an hour. On our own coasts they are capable of

the same swiftness of locomotion in the sea, are often seen in our numerous bays shooting along the waves, and darting here and there with surprising agility. When swimming about nothing escapes their scrutiny; even the shadows of the clouds, as they pass before the sun, seem to attract their attention. They will gaze long, as if in meditation, upon the domestic animals and human beings who may be moving along the shores, and when tired of this inspection of terrestrial objects, will suddenly shoot to the bottom to seek their accustomed food. They are great eaters, and appear to enjoy their meals amazingly. They feed on fish of all sorts, and are especially fond of flounders, which, being a ground fish, are easily caught.

The most civilized nations of the north once considered them delicate articles of food, but at present this use of them is confined to the barbarous tribes of the frozen regions. They are sought after by the former solely for their skins and oil. We have already described several of the methods employed for the capture of the seal, and will here mention only a few of the modes by which this species is hunted. The caves are visited which the seals frequent, and many young ones are slain with clubs. The old ones are shot when they can be reached on sand banks and rocks. Sometimes they are destroyed by recurved iron spikes, secured in beams of wood, fixed on the banks, near low-water mark, where they delight to bask in the sunshine. The seals, at the proper time of the tide, are surprised, and driven rapidly into the water, when they are intercepted by the spikes, and despatched with clubs. Martin, in his "Western Islands," gives an account of an annual seal-hunt that takes place in the month of October, near a rocky island, off N. Uist. "A number of boats resort to this place, with people sufficient to guard all the passages, and, on a signal given, the general attack begins, and sometimes three hundred young and old are killed in the encounter."

Mr. Edmonston informs us that in Shetland they are often taken by setting a net, generally at night, a little before full tide, around those rocks which are known to be their favorite haunts, taking care that the upper edge of the net be sunk to such a depth as shall admit of the seals swimming over it. These animals almost universally lay themselves on the rocks, when the wind is off' shore, soon after the water begins to fall. When they have been observed to have done so, and time has been allowed for the tide to fall sufficiently to bring the edge of the net to the surface, a sudden alarm is given, and the seals, in their hurry to escape, regardless of every other consideration, become entangled in the net, and are taken. The seal-hunter, however, is not always successful, for this sagacious animal, taught by experience, renders futile the hunter's art, sometimes by creeping out at the bottom of the net, or by jumping over it at the surface.

C. Discolor. — The Marbled Seal. Except in color this species does not

differ much from the common seal. F. Cuvier remarks, in regard to it, "I was for a considerable time in possession of the individual on which I found this species. My specimen was young, and its size appeared to correspond with that of the *C. vitulinus*. The colors, however, were very different. All the groundwork of its coat was of a very deep gray, varied with whitish, irregular lines, which formed, especially on the back and flanks, a kind of marbling, which was more marked when the animal was in the water than when it was dry."

The Marbled Seal is a gentle and intelligent animal. One of them, taken on the coast of France, and kept for some time in the Royal Menagerie, is thus spoken of by F. Cuvier: "Except in some monkeys, I have never known any wild animal which was more easily tamed, or attached itself more strongly. When it first came to the *Jardin des Plantes*, it endeavored to escape when I wished to touch it; but in a very few days all its apprehensions vanished; it had discovered my intentions, and rather desired my caresses than feared. It was in the same enclosure with two small dogs, which amused themselves by mounting frequently on its back, with barking, and even biting it; and although these sports, and the vivacity of the attending movements, were little in harmony with its own action and habits, yet it appreciated their motive, and seemed pleased with them. It never offered any other retaliation than slight, playful blows with its paws, the object of which was to encourage rather than repress the liberties taken. If the puppies escaped from the enclosure, the seal endeavored to follow them, notwithstanding the difficulty it experienced in creeping along the ground, covered with stones and rubbish. When the weather was cold, the three animals huddled closely and kindly together, that they might contribute to their mutual warmth."

"The creature did not exhibit any alarm at the presence of men or animals, and did not flee, unless when run upon in such a way as to threaten its being trod upon, when it got out of the way to avoid injury. Although very voracious, it did not manifest any opposition or anger when robbed of its food. Often," continues Mons. F. Cuvier, "have I tried him when pressed with hunger, and he never opposed my will; and I have seen the dogs, to which he was much attached, amuse themselves when he was feeding by snatching the fish from his mouth, without his exhibiting any rage."

C. Barbatus. — The Bearded, or Great Seal. According to Fabricius, this species often exceeds nine feet in length, and the young of the second year are six and a half feet long. Its head is long, and its forehead peculiarly prominent; the muzzle is very large, and the lips loose; the hairs of its whiskers are long, numerous, horny, flexible, white, and curled at the point; the eyes are large, and the pupil round and black, the iris, brown.

The fore paw is more free than that of the common seal; the shape also is peculiar, approximating somewhat to a human hand, having the middle finger the longest, and the thumb nearly as short as the little finger. The body is long and robust; the skin thick, and in the young, is covered with soft hairs, woolly underneath. The color varies with the age of the animal; the young are dusky white underneath; the old are of a darker hue. Crantz says the hair is black, but Baron Cuvier asserts that it is gray, sometimes brown above, with a longitudinal streak of black forming a cross on the chaufrin.

Although the home of the Great Seal is in the Arctic Seas, it is often found in much lower latitudes. Mr. Pennant refers to one thus: "A gentleman of my acquaintance shot one twelve feet long on the coast of Sutherland."

According to Mr. Edmonston, and some other writers, it is common to the north coast of Scotland and the Shetland Islands. These seals, he tells us, differ much from the common one. They associate in pairs, and the male appears to be attached to a single female. They keep by themselves, never associating with any other species, and shelter themselves in deep and almost inaccessible caverns. The young are brought forth in the months of September, October, and November, and when but a few days old, are as large as the common seal at the age of several months. Mr. Selby remarks that this species abounds in the Farn and adjacent islands, often attaining a very great size. He saw some specimens which weighed six hundred and thirty pounds, and measured from ten to twelve feet in length. The females produce their young on several of the outer rocks, where they suckle them every tide for fourteen or fifteen days, when they conduct them to the water, and teach them to swim and procure their food.

Mr. Wilson found this seal among the Hebrides, where it is known by the name of *tapraist*. From his observations of its habits, he concluded that it was not so lively or watchful as the common seal, nor so easily alarmed. Among the high cliffs, north of Papa-Stour, are extensive and profound caverns, difficult of access, in the dark recesses of which this animal delights to dwell. The most remarkable of these is Christie's Hole, which, in calm weather, can be explored by means of a boat. A large arch first presents itself, and after rowing through dark vaults, the light of the sun bursts in from the lofty opening above. The boat then pursues its gloomy course through another extensive perforation, which at length expands into an immense cavern, where the light of the sun is wholly excluded. In the innermost depths there is a steep beach, which terminates in small dens, to which these seals resort. It is customary for the inhabitants to go to this place at certain seasons of the year, armed with thick clubs, and well pro-

vided with candles. They attack the seals with their weapons, stun them with a blow on the head, and immediately put them to death. These creatures, though inoffensive, are brave, and boldly step forward in defence of their young; they face their destroyers, and with their teeth often wrench the clubs out of their hands. But their efforts are vain. The walls of the gloomy recesses are stained with their blood, and numbers of dead victims are carried off."

C. Greenlandicus. — Greenland Seal. To Fabricius, Muller, and Crantz we are indebted chiefly for a knowledge of this species. The latter author designates it by the vernacular name *Attersoak*. He states that when new born it is quite white and woolly. In the first year it is cream colored; in the second, gray; in the third, painted with stripes; in the fourth, spotted; and in the fifth, it wears its half moons, as the sign of maturity.

We learn from Fabricius that these seals are numerous in the deep bays and mouths of rivers in Greenland. Twice a year the herds leave the coast; first in March, returning in May; and again in June, reappearing in September. They bring forth their young in spring, having one, or rarely two, at a birth, which they suckle on fragments of ice, far from the shore. They never ascend the fixed ice, but live and sleep near the floating islands in vast herds. Among these islands they are sometimes seen swimming in great numbers, having one for their leader, who seems to act as sentinel for the security of the whole. They devour all the more common kinds of fish, having a preference for the arctic salmon, and not refusing shell-fish. When engaged in feeding, and one comes to the surface to breathe, he raises his head only above the water, and, without changing his place, quickly dives again. They seldom appear solitary upon the wave, principally swimming and fishing underneath, occasionally raising their heads when devouring larger prey. They swim in a variety of ways; sometimes on their backs, often on their sides, and at times whirling about as if to amuse themselves. They are incautious animals, frequently sleeping on the surface of the water, and are thus liable to fall an easy prey to the sperm-whale, which is one of their most formidable foes.

C. Oceanicus. — The Ocean Seal. This species so nearly resembles the one just described, that Baron Cuvier refused to recognize it as a distinct group, although Desmarest and Lesson affirm that it exhibits specific characters entirely different. In regard to the habits of these seals, Lepechin remarks that they love the colder parts of the sea; hence they only appear along the ice of the White Sea; and having about the end of April given birth to their young, and reared them for some time, they disappear with the ice, in the great Frozen Ocean, leaving only the young ones, which remain till the ice which adheres to the shore is thawed, when they, too, follow the others.

C. Hispidus. — Rough or Bristled Seal. This species is described by the author of the "FAUNA GREENLANDICA," as the smallest of all that are found in the northern regions, scarcely ever exceeding four and a half feet in length, with a perpendicular height of ten inches. The head is short and round, the muzzle extending to about one third of the whole head. The whiskers are white, with a few black hairs; they are sharp, compressed, and a good deal curved at their extremities; the eyes are small, the pupil white, and the iris brown. The body is almost elliptical and slender. The color on the back is brownish, intermixed with white spots, and on the abdomen white, with a few brownish spots. The young are almost without spots, but have the back of a somewhat livid color, with the belly white. The old males emit a most nauseating odor, which even disgusts the filthy Greenlander, on which account Desmarest gave it the specific name, *Phoca Fætida*.

This seal does not venture to explore the open ocean, but delights in retired bays, and in the neighborhood of the ice of the coasts, from which, especially when old, it very unwillingly departs. Its food is all kinds of small fish, such as haddock, but it is particularly fond of lobsters and crabs. The period of gestation is eight months, and the young are brought forth in February, on the fixed ice, its proper haunt. Here it has a hole, not so much for breathing as for fishing, near which it remains, usually solitary, rarely in pairs. It is the most incautious of seals, both in the water and on the ice, and sometimes whilst asleep on the wave it is pounced upon by the eagle, and borne to the shore, where a fierce battle often ensues, not always, however, with a result satisfactory to the king of birds.

Many thousands of this species are killed yearly on the west coast of Greenland, in latitude 72° . Notwithstanding their sickening smell, the Greenlanders appear to relish their flesh, which they devour with great avidity and enjoyment; but the oil and skins are their only products known to commerce. The latter were formerly very extensively employed in the United States in the manufacture of caps and trunks.

Phoca Leporina. — The Hare-like Seal. It is singular that Lepechin's description of this species, published nearly a hundred years ago, is almost the only account of it ever presented to the public. According to him, the length of this seal is six and a half feet, and its greatest circumference five. The head is elongated; the upper lip as if swollen, and thick like that of a calf; the whiskers are strong and thick, covering the whole front of the lip; the eyes are blue, and the pupils black; the fore paws are short and feeble, ending abruptly; the membrane of the hind feet is not lunated, but straight. Its color is a uniform dull white, with a tinge of yellow, and it is never spotted; the hairs are erect, and interwoven and soft, like those of the hare, especially when the seal is young. This seal frequents the White Sea

during the summer months, and ascends and descends the mouths of its rivers with the tide in quest of prey. It is also found on the coasts of Iceland, and within the polar circle at Spitzbergen. Sometimes it is borne, probably by the ice, far from its usual haunts, as a young one was captured on the coast of Normandy and taken to Paris.

We are indebted to Pallas for the following remarks on this species: "There are many kinds of seals in the Frozen Ocean, and this species, known among the Samoyedes as the *Hare of the Sea*, differs wholly from the common kind. The young hares of the sea, whose skins I have procured, are white as snow, and shining like silver. Their hair is longer than that of other seals, so that if the head and feet were removed, the skin might be mistaken for that of a young sea-bear. It is in spring that the Samoyedes usually hunt these animals, on their leaving the water, near the mouths of the Lina and other rivers, through those holes in the ice which the seals keep open for the purpose of respiration. They place a number of planks nailed together in the neighborhood of these holes, and fix a rope to them. They then conceal themselves behind masses of ice, and soon as the seals have left the deep, and lie down to bask in the sun, they pull the planks over the hole by means of the rope, and so prevent their return. They then easily despatch them."

The young specimen taken on the French coast was two feet nine inches in length, and of a yellowish-gray color. We find in the *Dictionnaire d'Hist. Nat.* the following very interesting account of it: "It was easily tamed. When it was teased it puffed like a cat, and when much irritated it barked feebly. It never attempted to bite in self-defence, but scratched with its nails. It never ate except when under water; its nourishment was the fish of the ocean, and could never be made to take those of fresh water. He was peculiarly attached to the old woman who had care of him. He soon came to recognize her at the greatest distance it was possible for him to espy her; he kept his eye on her so long as she was in sight, and ran to her as soon as she approached his enclosure. If he was free when his food was being brought to him, he ran and earnestly solicited it by the motions of his head, and still more by the expression of his countenance."

Phoca Bicolor.—The Pied Seal. Although this seal does not belong to the genus *Calocephalus*, we introduce it here as the only convenient place for considering it. Mr. Jenyns asserts that it is merely a variety of the common seal, while on the other hand the distinguished Pennant is certain that it has the characters of a distinct species. The accounts of it are very meagre, and we will dismiss it with the remark that the fore part of the head, in the one observed by Pennant, was black, whilst the hind part of the head and the throat were white; beneath each fore leg there was a spot of the

same color; the hind feet were a dull white, and the rest of the animal was entirely black. It was probably a young one. Its nose was taper and elongated, and the feet exhibited no peculiarities different from those of the other species.

Genus *HALICHERUS*. A very deep muzzle, obliquely truncated; head quite flat; molars of the upper jaw simple, those of the lower with an obsolete tubercle before and behind the principal one, are the characters which establish this genus. This seal inhabits the northern shores of Europe and the coasts of Pomerania. The only species described by naturalists is the one which we have noted below.

H. Griseus. — The Gray Seal. While the general color of this species is gray, different specimens exhibit a considerable variety of markings, which probably indicate a difference of age. The prevailing color of the hair in very young females, according to Mr. Ball, of Dublin, is a dull, yellowish-white, which is soon superseded by a more shining coat, blotched with gray. From a peculiarity in the hair of the adult, it being considerably recurved, and its upper surface appearing as if it had been scraped flat with a knife, the animal, when dry, and with its head turned towards the spectator, appears of a uniform silvery-gray, whilst viewed in the opposite direction, it appears altogether of a sooty brown.

The Gray Seal seems to be very inferior in intelligence to many other species, and all attempts to tame and domesticate the animal have, we believe, proved entirely ineffectual. The brain is very small in comparison with that of the common seal. On this point Mr. Ball well remarks, "It is impossible not to be forcibly struck with the contrast between the cerebral development of this genus and that of the former, and the relation between the difference of structure and their susceptibility of domestication. It is exactly analogous to the distinction between the crania of baboons and those of the higher groups of quadrumanous animals."

In the lower stomach of a specimen examined by Dr. Parsons, there were found about four pounds of flinty pebbles, all of which were sharp and angular, as if the animal employed them for cutting food. This singular habit, however, of taking stones into the stomach is not confined to this species, but appears to be common to all the seal groups. Several theories have been offered in explanation of the phenomenon, but none are wholly satisfactory.

Mr. Ball has given an interesting account of his method of hunting this seal, which we transfer to our pages.

"It occurred to me several years since that I could kill these animals by going to the mouths of their caves and striking them with a harpoon as they dived out. Acting on this, I went to Howth properly equipped, and took

a position at the mouth of a cave, in which I could hear the inmates baying loudly, like large dogs. On making a noise from the boat, several seals passed out with great velocity, at the depth of about eight feet; one I struck with an oar, and another with a harpoon, but not effectually, as it gave way after a short struggle. Learning from the failure, we made ready for the next, which I could distinctly see at the bottom, attentively watching us, sometimes advancing, and again retreating. It seemed scared by the harpoons, which the friend who aided me and I held so deep in the water as only to offer it room to pass. After a considerable time so spent, we raised our weapons a little, when it made a start to escape, but in vain, as both our harpoons struck it, mine penetrating even to its heart. It twisted the shaft out of my hands, though between two and three inches in diameter; it then pulled out our boat to sea, and when compelled to come to, then we fired four shots into it before it ceased violent exertions. The quantity of blood was enormous, spreading to a great extent over the surface of the water. The weight of the animal, though in poor condition, must have been upwards of five hundred pounds. Its skeleton measured seven feet and two inches."

Another notable fact in regard to this species is, that the females have four mammae, whereas the other seals have only two.

Genus *STENORHYNCUS*. The generic name of this seal signifies *narrow-muzzle*, and was suggested by the peculiar form of the snout. Mons. Fred. Cuvier remarks in regard to it, "The head of this seal is all snout when compared with the former genus." He also adds, as a further description, "The teeth, too, are quite peculiar. There are four incisors in the upper jaw in place of six, and the molars, though the same in number, are quite different in shape."

S. Leptonyx. — The Small-nailed Seal. Of the natural history of this species, zoölogists appear to be in absolute ignorance, as not a single fact has been recorded beyond the generic and specific descriptions. We can therefore only say, that the animal inhabits the southern oceans, and is between seven and eight feet in length; the nails of the flippers very short; the muzzle narrow; the color on all the upper parts of the body is a dark, yellowish-gray, more yellow on the sides, whilst the under part of the body, feet, and a portion immediately over the eyes, are of a pale, grayish-yellow.

S. Weddelli. — Leopard Seal. This species was discovered in the Southern Ocean, by Captain Weddell, who captured several of the animals, but unfortunately has recorded no facts bearing on their natural history. They are between nine and ten feet long; the neck long and tapering; the head small; the body pale, grayish above, yellowish below, and back spotted with pale white.

Genus *PELAGIUS*. This genus contains but one species, so far as known, viz.:—

P. Monachus.—The Monk Seal. Fortunately the materials for constructing the history of this species are liberally furnished, in striking contrast with the scantiness of detail in regard to the two preceding groups. This seal inhabits the southern shores of Europe, and was well known to the ancients, who had many superstitious notions in regard to the mystical efficacy of its skin. The Romans considered it a sure protection against lightning, and hence sheltered themselves under seal-skin tents during thunder storms. Suetonius relates that the Emperor Augustus had such a dread of lightning, that he never travelled without carrying along with him one of these skins.

The average length of this species is between ten and twelve feet. A male specimen, described by Buffon, was covered with a short, smooth, shiny brown hair, mixed with gray, principally upon the neck and head, where it was spotted; the fur was thicker on the back and side than on the belly, where there was a large white marking, on which account he named it the *White-bellied Seal*. The eyes were large, full, of a brown color, and like those of an ox. When the creature had been long out of water, they became bloodshot, especially at the angles.

F. Cuvier gives a very interesting account of a female seal of this species, which was exhibited in Paris in 1813. It was kept in a trough which scarcely exceeded its own dimensions, being only one foot longer and two feet broader than itself. Every day it received several pounds of fresh-water fish, and usually spent nine or ten consecutive hours in water ten inches deep. At the close of the day the water was removed, that the animal might be dry during the night, and in spite of this artificial mode of life it enjoyed excellent health. It devoured its food without chewing it; having removed the viscera, it always took it into its mouth in such a direction that the fins and scales offered no obstacle to its easy passage. It slept through the entire night, and could not be kept awake during the day without the most persevering efforts. It sometimes slept under the water, where it could not breathe, for an hour at a time.

Buffon, in his *Hist. Naturel Suppl.*, describes this seal at considerable length, in his usual graphic style. He remarks, "Its aspect is mild, and its disposition not fierce; its eyes are quick, and indicate intelligence, or, at all events, they express the sentiments of affection and attachment to its master, whom it obeys with the utmost readiness. At his order we have seen it lay down its head, turn in various directions, roll round and round, raise the fore part of its body quite erect in its trough, and shake hands with him. It responded to his voice and signs by a hoarse sound, which

seemed to proceed from the lower part of the throat, and which might be compared to the hoarse bellowing of a young bull. It appears the animal produced this sound both in inspiration and expiration, but it was clearer during the former, and rougher during the latter. It might be handled with all freedom. You might thrust your hand into its mouth, and rest your head on that of the seal. When its master called, it answered, however distant he might be; it looked round for him when it did not see him, and on discovering him, after an absence of a few minutes, never failed to testify joy by a loud murmur. Some of its accents were sweet and expressive, and seemed the language of pleasure and delight.

"When drowsy it did not promptly attend to its master, and it was only by putting food under its very nose that it could be excited to its accustomed energy and vivacity. It then raised its head and the upper part of its body, supporting itself on its fore paws to the height of the hand which held the fish; for it was scarcely satisfied with any other aliment, having a preference for carp, and still more for eels; these, though raw, were seasoned to its taste by rolling them in salt. It required about thirty pounds of these live fish every day; it greedily swallowed the eels whole, and even the carp when first offered it, but after devouring two or three entire, it subjected them to some preparation, by crushing their heads with its teeth, then partially removing the entrails, and concluded by gulping them head foremost.

"The keepers of this animal stated it could live for days, and even for more than a month, without entering the water, provided it was washed every evening with clean water, and had plenty of salt water to drink, for when it drank fresh water, especially if it were not quite pure, it was always sure to be injured by it.

"This interesting creature seemed to be affected by some malady that manifested itself in fits of violent irritation and blind rage, during which it failed to notice the soothing tones of its master, which, at other times, it was its delight to hear; it continued to pine away, and at length died in one of these paroxysms."

Genus *STEMMIATOPUS*. This genus derives its name from a cartilaginous appendage, which rises like a crest or crown from the fore part of the head, and extends backwards over the cranium several inches, giving the animal a very singular appearance.

S. Cristatus. — The Crested Seal. The fact that this seal has sometimes been confounded with the Elephant Seal, and sometimes with the Mitrata, furnishes another instance of the confusion which yet prevails in the arrangement of the different groups. The learned Fabricius has contributed the most accurate information in regard to the species which we have been able to obtain. According to him the crested seal is about eight feet in length.

A tuberculous body, like an inflated bladder, keel-shaped in the middle, covers the anterior part of the head, and so preserves the forehead. This protuberance is confined to the males. The eye is large and black, with a brown iris; the body is long and robust; the color varies according to age, being darkest in the aged. The young, in the first year, are white, the upper part of the back being a slight gray; in the second year they are snow white, with a straight line of brown on the back.

This species is found only on the southern shores of Greenland, delighting in the high seas, and visiting the land chiefly in April, May, and June. It is polygamous in its habits, and produces its young usually on the ice. It bites hard, and barks and whines like a dog, and on being wounded becomes fierce, often bravely attacking its assailants, inflicting severe wounds, whilst the pulpy crest which extends over the tender point on the nose affords an ample protection from their otherwise stunning blows; but when it is surprised by the hunter, it moans and cries like a child, shedding abundant tears.

We learn from Crantz that these seals frequent the great ice islands, where they sleep in an unguarded manner. They are found in great numbers in Davis's Straits, where they make regularly two voyages a year, and remain from the month of September to the month of March. They then depart to bring forth their young, and return with them in the month of June, when they are very lean and exhausted. They set off again in July, and proceed to the north, where they find plenty of food, as they return fat and robust in September.

S. Mitratus. — The Mitred, or Hooded Seal. The authors offer no information whatever in regard to the size, habits, disposition, and habitat of this species. Of the peculiar appendage to the head, from which the specific name is derived, Cuvier remarks, "Upon the cranium and neck of this animal there is a very singular structure, which may explain what has been said concerning a kind of hood which it erects and swells up with pleasure. This structure is composed of numerous vessels, forming a tolerably thick network, which may contain a great quantity of blood, and which causes the region of the neck and shoulders to appear more swollen than in most seals."

In regard to this *hood*, Crantz says, "It has a thick folded skin upon its forehead, which it can draw down over its eyes, to defend them against the storms, waves, stones, and sand."

Genus MACROHINUS. M. de Blainville has stated the generic characters of this remarkable group as follows: "The incisors are hooked like the canine, but are much smaller; the canine are very strong tusks, and the molars have simple fangs, and present the singular appearance that their

crowns are smaller than their roots; they appear like a nipple on the round base which supports them.

M. Proboscidius.—The Proboscis, or Elephant Seal. The specific name of this animal is derived from the peculiar appearance of its short trunk, which is a most singular prolongation of the nostrils. When the animal is reposing in tranquillity, the snout or proboscis is shrivelled like a bladder from which the air has been discharged, and, falling downward to the mouth, makes the face appear much larger than it is; but when the seal is excited or enraged, the trunk at once assumes a tube-like shape, and is elongated to the length of about a foot. This erection of the proboscis not only changes the countenance in a remarkable manner, but effects also an extraordinary modification of the voice. The females are not furnished with this organ. According to Peron's description, this animal is of a grayish color, is adorned with extensive whiskers, composed of long, coarse hairs, twisted into a screw-like form, with other similar hairs over the eyes, which are extremely large and prominent. The swimming paws are very powerful, having at their margin five small nails. The tail is short, and nearly concealed between two flat, horizontal fins.

But the enormous size of this creature strikes the beholder with amazement, and entitles it to the name of Elephant Seal far more than its prominent forehead and erectile trunk. The largest elephant of India is a diminutive brute in comparison with this gigantic amphibian, whose huge, unwieldy bulk is more than double that of the former animal, often attaining a length of thirty feet, with proportions of equal magnitude. Nature has established the home of the species in the Southern and Atlantic Oceans, between 35° and 55° of south latitude, among the most desolate islands; it does not, however, frequent all the islands of a group indiscriminately, but by some unaccountable instinct selects a few out of the many, carefully and persistently avoiding all the others. No explanation of this strange proceeding has ever been proposed which can be considered satisfactory.

But the sea elephant does not confine itself to the inhospitable shores of its native haunts, for as the wintry storms begin to howl over the southern seas, we find it moving towards the north, in search of a milder climate and more abundant forage; and then again, when summer glows on the more northern shores, and spreads its splendors over the billows, it sets out on its homeward journey, panting for the cooler breezes of Kerquelen's Land and South Georgia's Isles. A month after this voyage, Peron informs us, the females begin to bring forth their young, one at a birth, according to this distinguished traveller, or two, if Anson's statement is to be relied on. The young at birth are between four and five feet long, and weigh seventy pounds. In suckling it the mother reclines upon her side. The period of

nursing continues seven or eight weeks, during which no member of the family either eats or goes to sea. The growth of the young one is very rapid, doubling its dimensions in the first eight days, and increasing to more than twice its original weight; as a consequence, the mother, who takes no food, pines away from day to day, and sometimes sinks under it. The first teeth appear at the end of a fortnight, and in four months they are all present. At the end of the third year the young animal arrives at maturity, when the remarkable proboscis appears, which, in this species, seems to be the sign of virility. Previous to this period the young dwells entirely with the females, but after this it takes its place among the males.

When the young are six or seven weeks old, they are conducted to the sea, to be instructed in the arts that belong to seal-life. The whole troop moves in concert, swimming at first gently so as not to fatigue the younger members, who are as yet unaccustomed to the watery element. When the young wander away from the herd, they are immediately pursued by some of the older ones, who compel them to return to the flock.

After a voyage of three or more weeks, for the purpose which we have already indicated, and to recruit their exhausted strength, they return to the coasts, when the period of their amours begins. Polygamy is an established institution in the society of the elephant seals, one male having as many as a dozen or twenty wives, and sometimes even more. This is a curious fact, and leads to the inquiry, Is polygamy, then, a law of nature, established in the constitutions of the several races where it prevails? And do the various nations of men among whom polygamy has prevailed from time immemorial act in obedience to an immutable ordinance of the God of Nature, as it must be admitted these seals do? This, however, is not the place for a speculation of this kind, and we will proceed to say, therefore, that this season of love is often signalized by terrible battles among the males, for it not unfrequently happens that if one of them is destitute of a harem, he will attempt to rob some brother seal of his wives, which attempt will, of course, be fiercely contested. Then follows a frightful duel. The two rivals waddle heavily along till they meet, when they join snout to snout, as human duelists first strike each other's swords; they then raise the anterior portion of their body as far as their fore paws, and, opening their immense mouths, whilst their eyes are burning with rage, dash furiously against each other with all the force they can command. The conflict now becomes terrible. They tumble over each other, teeth crash with teeth and jaws with jaws, inflicting ghastly wounds, sometimes knocking out each other's eyes and tusks, and soaking the earth with their blood; and thus the battle rages, until they are completely exhausted. It is seldom that either is left dead on the field, and the wounds they inflict, however deep, heal with inconceivable

rapidity. According to seal-morality, the victor is entitled to the harem; the females, who have been indifferent spectators of the struggle, offer no resistance, but quietly submit to the new lord which the result of the combat has given them. These seals, too, appear to have a rude sense of justice, and sternly rebuke and punish anything like foul play; for if two should attack one, others will hasten to interfere, and help the oppressed individual, expressing, in a marked manner, their disapprobation of such dishonorable conduct. Sometimes they form a ring round the combatants, to see that the battle is fairly fought.

The cry of the female and the young male resembles the lowing of an ox; but in the adult males, the proboscis gives such an inflection to their voice, that it is something like the kind of noise produced by gurgling. This hoarse and singular cry, says the author of the "*Voyage aux Terres Australes*," is heard at a great distance, and is truly wild and frightful: mingling with the howling of the tempest during the stormy nights which often occur in those dreary regions, no combination of terrific sounds can be conceived of more calculated to fill the inexperienced traveller with a mysterious dread. And yet these animals, notwithstanding their colossal size, and great strength, and dreadful bellowings, are as docile and gentle of disposition as children. Human beings may mingle freely with them without molestation or the least danger. They never attack man unless in self-defence, and after great provocation. They are capable of considerable education and strong attachment. On one occasion an English sailor selected a young one as a pet, and treating it kindly for a few months, it became so tame that it came at his call, allowed him to put his hand into its mouth and ride upon its back. In a word, this gentle creature did all in its power for its protector, and bore everything from him without offence. Penrose, indeed, affirms, "that his crew rode on these animals as they would do on horses, and when they did not swim with sufficient speed, forced them to quicken their progress by the spur."

The elephant seal differs from most of the other species in many of its habits. It avoids ice-islands and rocks, and loves to waddle or repose on the sandy flats of the shores in the vicinity of fresh ponds, in which they plunge with extreme delight, and whose waters they drink with great apparent pleasure. They dislike great heat, and avoid exposing themselves to the direct rays of the sun, and, consequently, when lying on the beach during the day, they completely cover themselves with sand, moistened by the water of the sea; thus enveloped, they appear, at a little distance, like enormous rocks.

We have elsewhere spoken of the products of these seals, and their importance in a commercial point of view, and described the manner in which

they are hunted and slaughtered. But they have other foes besides man. The fishers state that they sometimes see them unexpectedly ascend from beneath the wave in the greatest apparent alarm, many of them being covered with wounds, and dyeing the water with their blood. Their panic concurs with their wounds in proving that they have been hunted by some formidable enemies. But what are these? The fishers unanimously agree that they know no animal that could make such large and deep wounds, and therefore presume that these contests must be carried on with some unknown monsters, dwelling far from the coasts, whilst they, at the same time, allow they have never otherwise been able to detect any trace of them.

The females scarcely ever make any resistance when attacked; they will attempt to flee, but if prevented they become violently agitated, their countenance assumes the expression of despair, and they weep piteously. Peron says that he has himself seen a young female shed tears abundantly, whilst a wicked and cruel sailor amused himself at the sight, knocking out her teeth with an oar whenever she opened her mouth. The poor animal might have softened a heart of stone,—its mouth streaming with blood, and its eyes with tears. But timid as the female is, maternal affection inspires her, on occasions, with the courage of the lion. Anson relates that, "one day a sailor, being carelessly, and, we add, cruelly, employed in skinning a young sea elephant, in its mother's presence, she came upon him unperceived, and getting his head into her mouth, scored his skull in notches in many places, and thereby wounded him so desperately, that though all possible care was taken of him, he died in a few days."

It is not positively known what is the natural limit of the life of these seals, although some, who have had opportunities for observation, estimate that they live twenty-five or thirty years. When they become fatally indisposed, they seem to know that death is near; and, as if inspired by some memories of their childhood, they bid adieu to the sea, and, advancing some distance into the country, lie down among the brush-wood, calmly await for the last hour, and resign their life in the situation they first received it.

We have now arrived at the second great division of the PHOCIDÆ,—the *Otaries*, or seals which are furnished with external organs of hearing. F. Cuvier has arranged the several species under two genera, *Platyrhincus* and *Arctocephalus*. Besides being supplied with the external ear, the *Otaries* differ from the true seals in having their fore paws placed farther back in the body, as if intended exclusively for swimming, giving an appearance of greater length to the neck; the fingers more concealed in the skin, and without nails; the web of the hind feet prolonged beyond the nails into

five long straps, and the under surface of all the extremities devoid of hair, like the sole of the foot.

Genus *PLATYRIHINCUS*. According to De Blainville, the dentition of this group is as follows: six incisors in a straight line, the external much the largest, and like small canines; the canines are of great size; and then, without any interval, six molars, almost equal in length, and augmenting in thickness from the extreme ones to the third, all nearly pointed and conical.

P. Leoninus. — Sea Lion of Steller. Steller describes this species as being about fifteen feet in length, and sixteen hundred pounds in weight. The skin is very thick, and covered with coarse, strong hair, of a reddish-brown, which color, however, is subject to some variations by sex and age. The head is large; the nose stretched out, and somewhat turned up; the ears erect and distinct; the eyes are very large, the pupil of a brilliant, sparkling green, and the iris is white. But the most distinguishing attribute of the sea lion, and which, more than color or size, gives it an appearance something like that of its terrestrial namesake, is the erect and undulating mane that adorns its neck. These animals inhabit the northern seas, and especially the shores of the Kurile Islands, as far as Matsmai, where Captain Spunberg tells us he found them in great abundance, swarming on a certain island of the most picturesque form, bordered with rocks resembling buildings, to which he gave the name of the Palace of Sea Lions. Their food is fish, the smaller seals, and sea otters. During the heat of summer, the old males almost entirely abstain from food, indulging in indolence and sleep, and become extremely emaciated. They are more brutal and savage than many of the species, and have altogether a very ferocious appearance, but in the presence of man are the most timid and helpless of all beasts. When taken by surprise, they appear to be overwhelmed by fear, heave great sighs, and tremble so much that they can scarcely move. Yet when driven to desperation they will fight with great courage and fury. Like other seals, however, they seem, after a little familiarity, to become attached to man. Steller lived several days in a hovel, in the very midst of them, and they soon became intimate. They watched all his proceedings with great apparent curiosity and calmness, and laid themselves down close beside him. They permitted the cubs of other seals to sport near them without offering them the least injury. They do not seem to possess that strong affection for their young as the other species, and will allow them to be killed before their eyes without offering to defend them, or showing any resentment. The young are taken to sea when somewhat advanced, and when weary, mount on their mother's back, whence they are often pushed by the males, to accustom them to the exercise. They are polygamous, but are contented with from two to four wives apiece, whom they treat with

great respect, often fondly caressing them. The cry of the older ones resembles the bellowing of a bull; that of the younger, the bleating of sheep. Although they have their winter and summer haunts, they do not make such extensive voyages as some other species. They choose rocky shores, desert rocks in the ocean, for their dwelling, and we are told that navigators, in the foggy weather common to those regions, have often been saved from shipwreck by their roaring, which appears to be as useful as a fog-bell.

The natives hunt them by watching their opportunity to find one asleep, when one of the most courageous among them strikes his harpoon into the creature, and then takes to his heels as fast as he can. His comrades then fasten the line attached to the harpoon to a strong stake, thus arresting its flight, when they shoot at it with arrows, and pierce it with lances, until it is quite overcome. Sometimes they employ poisoned arrows. From the great size and power of these animals, the natives attach a kind of glory to the destruction of a sea lion, and will hunt it at great peril to themselves, for many successive days, by sea and land, without any other compass than the stars of heaven.

Otaria Leo Marinus Fosterii.—The Sea Lion of Foster. This species is a native of the southern hemisphere, and we are indebted to Mr. Foster for whatever knowledge we have of the character, size, and habits of the animal. Mr. Foster accompanied Captain Cook in his second voyage, and observed great multitudes of them on the rocks along the shore in New Year's Harbor. He says, "These seals, on account of their manes, well deserve to be called sea lions. We put into a little cove under the shelter of some rocks, and fired at several of these fierce animals, most of which immediately threw themselves into the sea. Some of the most unwieldy, however, kept their ground, and were killed by our bullets. The noise which all these animals made was various, and sometimes stunned our ears. The old males snort and roar like mad bulls or lions, the females bleat exactly like calves, and the young cubs like lambs. They live together in numerous herds. The oldest and fattest males lie apart, each having chosen a large rock, to which none of the rest dare approach, or, if they do, a furious combat ensues. We have often seen them seize each other with a degree of rage which is not to be described; and many of them had deep gashes on their backs, which they had received in the wars. The younger active sea lions, with all the females and the cubs, lie together. They commonly waited the approach of our people, but as soon as some of the herd were killed, the rest fled with great precipitation, some of the females taking a cub in their mouth, whilst others were so terrified that they left them behind. When left to themselves, they were often seen caressing each other in the most tender manner, and their snouts often met together, as if they

were kissing. They come on shore on these uninhabited spots to breed, and do not feed during their stay on land, which sometimes lasts several weeks; they then grow lean, and swallow a considerable quantity of stones to keep their stomach distended. We were surprised to find the stomachs of some of them entirely empty, and those of others filled with ten or twelve round, heavy stones, each the size of two fists."

To this interesting description by Mr. Foster, we subjoin a paragraph from Captain Cook's account. "The male is surrounded by from twenty to thirty females, and he is very attentive to keep them all to himself, beating off every male which attempts to come into his flock. Others again had a less number, some no more than one or two; and here and there we have seen one lying, growling in a retired place alone, and suffering neither males nor females to approach him. We judged that these were old and superannuated."

The weight of a full grown male, according to Buffon, is about sixteen hundred pounds, and its length ten or twelve feet; the females are much more slender and shorter, usually about seven or eight feet long. They are everywhere equally thick, and look like great cylinders, more suitable for rolling than for walking. Neither does this rounded body seem properly trimmed, because, being covered with an immense quantity of fat, it immediately assumes all the inequalities of the soil and rocks over which it moves, or on which it rests while taking repose. The color of the male is black, and the hair of the female is of an ashy hue. In habit and disposition they do not appear to differ much from the sea lion of Steller. In the presence of man they are very timid, and even when attacked with a stick will retreat as fast they can.

The females never fight with each other, nor with the males, and live in entire dependence on the chief of the family; but when two grown males, or rather heads of families, Mr. Foster remarks, engage in combat, all the females attend to witness the conflict, and if the chief of another troop interfere with the combatants, either on one side or the other, the act appears to be considered by these creatures a breach of fair dealing, and other chiefs will then take part in the contest, and the battle will become general, and terminate in a vast effusion of blood, and even in the death of many of the males, whose females are immediately joined to the family of the victor. From this it would appear that the domestic habits and disposition of the sea lion of Foster do not differ in any respect from the great sea lion of the north.

P. Leoninus. — The Sea Lion of Pernety. The head and face of this animal very strongly resembles those of the king of beasts. The body is robust and tapering towards the tail, and the neck is covered all round with

a distinct mane of coarse, bristly hairs, between three and four inches long, of a brownish-black and grayish-white color. The coat is generally of the same color, but not so coarse; on the under portion of the body it is of a deep brown color.

Pernetty gives the following description of those he met with among the Falkland Islands: "The name of sea lion applies best to that species, the head, neck, and shoulders of which are covered with hair as long, at least, as that of the she-goat. These sea lions are about twenty-five feet long, and nineteen or twenty in circumference, where they are the largest. The teeth of the maned lions are much larger and more solid than those of other seals. I have now in my possession the tooth of a true sea lion, the diameter of which is at least three inches, and its length, including the root, seven, and it is not one of the largest. We have counted twenty-two such as this in the mouth of one of these lions, and five or six more had fallen out. They did not project from the bone much above an inch and a half, and were solid throughout their length. Their solidity is almost equal to that of flint, and they are of a dazzling whiteness. Many of our sailors took them for white flints when they found them on the shore, and it was with difficulty I could persuade them they were mistaken.

"These sea lions are not more savage nor more objects of apprehension than the other species. They are equally heavy and clumsy in their gait, and more frequently endeavor to fly, than to run at those who attack them. They live upon fish, sea-birds, which they catch by surprising them, and herbs. They bring forth their young among the rushes, which grow on the sea shore, to which they retire for the night, and continue to suckle them till they are strong enough to go out to sea. At sunset they are seen to congregate together, and to land in troops on the shore, and then the cubs call for their dams by cries so like those of lambs, and calves, and kids, that any one might easily be deceived, were he not aware of their true nature.

"It was stated that their flesh was very good, but I never tasted it; but I can affirm that their oil is most excellent. It is obtained both by the assistance of heat and without it, coming away spontaneously when exposed to the sun and air, when it is excellent for culinary purposes."

Genus *ARCTOCEPHALUS*. The generic name of this group, a Greek compound, signifying *arched* head, sufficiently describes that portion of the animal. The muzzle is retracted, the four central incisors are deeply bifurcated, and the lower are notched both before and behind; the molars have only one root, not so large as the crown, which last consists of a centre tubercle, with a much smaller one at its base, both behind and before.

Otaria Pusilla. — The Cape Otary. This species is a native of the Cape of Good Hope, and according to Pagis the largest specimens are about four

feet in length, and two and a half feet in circumference; the common size is two and a half feet long, with a foot and a half in circumference. The head is round, with a very short snout, and its physiognomy is agreeable. The whiskers are long, simple, and black; the ears are straight; the neck and chest are full. Its coat is soft and glossy, of a brownish color, tending to iron gray; the head is deeper colored; the under part is much lighter, and the feet are black. These seals are timid, social, and harmless animals, and, after a short acquaintance, become fond of the society of man. Mr. Pagis says that he kept two of them for eight days. The first day he put sea-water into their tub, one foot and a half deep, but as they seemed anxious to avoid it, he tried fresh water, which was not more agreeable. On coming out of the water, they shook their coats like dogs; they sneezed, too, like them, and scratched and cleaned themselves with their snout, and lay down close together, as dogs do. When the sun shone they were left on the ship's deck, and never seemed to wish to leave except when they saw the sea. They not only scratched themselves and each other, but solicited that service from the men, whom they followed with great familiarity, and smelt them as dogs do. They had a great affection for each other, and when separated, immediately endeavored to meet. If one were taken up, the other was sure to follow. As they did not appear to thrive in their confinement, they were thrown into the sea, where they seemed to be much more at home.

A. Ursinus. — The Sea Bear, or Ursine Seal of Steller. This somewhat remarkable species is an inhabitant of the Northern Ocean, and constitutes a very numerous family or group. The islands which lie off the north-western limit of America appear to be its favorite haunts, where, at some seasons of the year, vast multitudes of these animals completely cover the shores and adjacent rocks. Steller has furnished some very curious information in regard to them, a synopsis of whose very interesting description we give below. They derive their name from their striking resemblance to the common bear. This likeness is seen especially in the head, also in the mouth, which is small and prominent, in the forehead, which rises suddenly towards the eyes, and in the possession of the nictitating membrane. The eye is large as that of the ox, having the iris black and the pupil green. The length of a full-grown sea bear is about seven and a half feet. The teeth are like those of the sea lion, but much smaller. It has four feet, sufficiently developed to enable it to stand and walk like terrestrial animals, though not with equal ease. The fore legs are two feet long and eight inches broad, terminating in long, wide, and powerful webbed paws, which enable the animal to elevate the upper portion of the body above the water, and sustain it in an erect position. On the land, folding the hind feet under, and reclining on the fore paws, it sits after the fashion of dogs.

Its form is protected by a very thick skin, which is covered with long, close, and erect hair, under which is a coat of soft fur, of a reddish-brown color. The hairs in the adult males are black, but become whitened with age. The females are generally ash-colored, although they are frequently seen with markings of brown.

It has been remarked, as a curious circumstance, that these animals do not seem attracted to the Asiatic coast, and only occasionally land thereon; but they crowd the islands along the American shores, in countless numbers. As soon as spring begins to smile on the northern waters, they assemble in thronging multitudes among the Kurile Islands, in which they seem to delight, and where they establish their commonwealth for the space of two months. At this period the females bring forth their young, which are objects of great affection to both sire and dam. They are polygamous, and have a kind of patriarchal system, each male having from eight to fifty females, which, together with the young, form a family of more than a hundred, over which the chief rules with despotic sway. Although they lie in thousands along the shore, the families keep entirely separate,—a peculiarity which is observable even when they are at sea. We have already referred to the cruel and tyrannical disposition which the male sometimes exhibits towards his wives, and their tearful submission and patience under the dreadful chastisement he sometimes inflicts.

Such animals as are destitute of females, and from age are deserted by them, retire into solitude, and live a sort of hermit life, becoming excessively peevish and quarrelsome. So attached are they to their selected stations, that they will defend them against all aggressors, even at the cost of life. If one perceive another approach its seat, he instantly rouses himself, and prepares for battle. During the fight they insensibly encroach on the territory of others, so that the discord spreads throughout the whole community, the conflict becomes general, and the shores resound with their notes of war. Besides these war notes, they have several others. When they are in a sportive mood, their voice is like the lowing of a cow; when victorious in battle, they chirp like a cricket, and complain and whine like a whelp on receiving a wound.

They swim with extraordinary fleetness, at the rate of eight miles an hour, and often on their back. If struck with a harpoon, they drag the boat over the wave with great impetuosity, and sometimes succeed in sinking it. Even out of the water, the females, especially, run with such rapidity that he must be a swift runner who would overtake them.

The ursine seal is the most courageous and daring of all the Phocidae. It has no fear of man, and will fight him bravely to the last, in defence of its life, and that of its wives and cubs. It is so tenacious of life, that, after



receiving wounds that would instantly have killed any other animal, it will live sometimes for weeks. These animals have a kind of Spartan rule in their society. No sea bear is allowed, by sea-bear law, to desert his post and flee during a battle. Should he do so he will be severely punished by the others.

This species is sought for on account of its commercial value, the fine, black, and curly-haired skin of the younger animals being particularly esteemed, and classed among the finer furs which find a ready sale in the Chinese market. "The Russian American Fur Company derives the best part of its revenue from the sea bears, and for prudential reasons allows only a limited number to be killed annually, on the Island of St. Paul, one of the Pribilow group, their favorite summer haunt. A certain number of Aleuts, located there under Russian superintendence, engage in the chase. It begins in the latter part of September, on a cold, foggy day, when the wind blows from the side where the animals are assembled on the rocky shore. The boldest huntsmen, accustomed to clamber over stones and cliff's, open the way; then follow the older people and the children, and the chief personage of the band comes last, the better to direct and survey the movements of his men, who are all armed with clubs. The main object is to cut off the herd as quickly as possible from the sea. All the grown up males and females are spared and allowed to escape, but the younger animals are all driven landward, to the distance, sometimes, of a couple of miles, and there clubbed to death. Those which are only four months old are doomed, without exception; while of the others, only the males are killed, and the females are politely led back again to the coast, and restored to their respective families. For many days after this cruel slaughter, the bereaved mothers swim about the island seeking their young, and weeping and mourning piteously for their cubs, which they shall see no more."

Otaria Ursina. — The Ursine Seal, or Sea Bear of Foster. On examining the external figure of the sea bear of the Southern Ocean, we cannot perceive any character to indicate a species distinct from the sea bear of the north, and certainly in mental and moral characters there is no difference at all. Foster, the naturalist of Captain Cook's expedition, refers to these animals thus: "We soon perceived that another kind of seal occupied this part of the island, — New Year's Island, in Staten Land. These were no other than the sea bears, which we had already seen at Dusky Bay, but they were here infinitely more numerous, and grown to a much larger size, equal to that assigned them by Steller. They are, however, far inferior to the sea lions, the males never being above eight or nine feet long, and thick in proportion. Their hair is dark brown, sprinkled with gray, and much longer on the whole body than that of the sea lion, but it is does not form a mane.

The general outline of the body, and the shape of the fins, are exactly the same. They were more fierce towards us, and their females would die in defending their young. We observed that these sea bears and the lions, though sometimes encamped on the same beach, always kept wide asunder, and had no communication with each other. Dr. Sparman and myself were near being attacked by one of the sea bears on a cliff, where several hundreds were assembled, and where all seemed to wait the issue of the fight. The doctor had discharged his musket at a bird, and was going to pick it up, when this old bear growled and snarled, and seemed ready to oppose. As soon as I was near enough I shot the surly creature dead. At that instant the whole herd, seeing their champion fallen, hurried to the sea; and many of them hobbled along with such precipitation as to leap down between forty and fifty perpendicular feet upon the pointed rocks on the shore, without receiving any hurt; which may be attributed to their fat easily giving way, and their hide being remarkably tough." Speaking afterwards of those he saw at New Georgia, he remarks, "They were all of the kind called sea bears, and were more fierce than any we had seen at New Year's Isles, and did not care to run out of our way. The young cubs barked at us, and ran at our heels as we passed, trying to bite our legs."

Wood Rogers gives a similar account of the disposition of those he met with at the Gallipagos Islands. "A very large one made at me three several times, and if I had not happened to have had a pike-staff, headed with iron, he might have killed me. I was on the level sand, when he came open-mouthed at me from the water, as fierce and quick as an angry dog let loose. All the three times he made at me I struck the pike into his breast, which at last forced him to retire into the water, snarling with an ugly noise, and showing his long teeth."

One extract more, from Dampier's Voyage, will suffice to give a pretty correct view of the size, disposition, and habits of these bears. "These animals exist in thousands in the Island of Juan Fernandez. They are the size of an ordinary calf, and their head is shaped like a dog's; their hair is of different colors, as black, brownish-gray, and spotted, appearing very smooth and agreeable when they first come out of the water. They have so fine and short a fur, that I have seen nothing like it. There are always round the island thousands in the bays, and going to and returning from the sea. When a mile or two from shore, you observe that the island, and all round it, is covered with them, some playing on the wave, and others basking on the shore. When they come from sea, they bleat for their young like sheep, and pass by an infinity of others, till they come to their own cub. The young resemble small dogs, and greatly prefer the land, but when chased thence, they make for the sea as fast as the old ones, and swim very

fast and lightly, though on land they are sluggish, and will not leave their own lair till they are well beaten."

O. Falklandica. — The Fur Seal of Commerce. With this species terminates the great series of the Phocidae. The fur seal is especially worthy of notice, on account of its great value in a commercial point of view. The skin is prepared for market in a manner different from that employed in the preparation of most others. The long hair, which conceals the face, is first removed by heating the skin, and then carding it with a large wooden knife, fashioned for the purpose. The fur then appears in all its perfection, and sells in China for about two or three dollars, and in England and the United States at about three times that price. Not many years ago they were used as linings and borders of cloaks, mantles, and for fur caps.

The color of this animal is a uniform lightish gray above, passing gradually underneath into a reddish-white, which is deepest in the abdominal region. The length of a full-grown male, according to Captain Weddell, is six feet nine inches, and that of the female is not more than three and a half feet. This class of the males, however, is not the most numerous, but being physically the most powerful, they keep in their possession all the females, to the exclusion of the younger branches; hence, at the time of parturition, the males attending the females may be computed as one to twenty; which shows this to be, perhaps, the most polygamous of animals.

Captain Weddell continues his interesting description thus: "They are in their nature completely gregarious; but they flock together, and assemble on the coast at different periods, and in distinct classes. The males of the largest size go on shore about the middle of November, to wait the arrival of the females, who must soon follow, for the purpose of bringing forth their young. These, in the early part of December, begin to land, when they are taken possession of by the males, who have many serious battles with each other in procuring their respective seraglios; and by a singular instinct they carefully protect the females under their charge during the whole period of gestation, which is about or nearly twelve months. They seldom have more than one at a time, which they nurse and rear with great apparent affection. By the middle of February the young are able to take the water, and after being taught to swim by the mother, they are abandoned on the shore, where they remain till their coats of fur and hair are completed. During the latter end of February the dog seals go on shore; these are the young seals of the two preceding years, and such males, as from want of strength and age, are not allowed to attend the pregnant females. These young seals come on shore for the purpose of renewing their annual coats, which being done, by the end of April they take the water, and scarcely any are seen on shore again till the end of June, when some young males come up and go off

alternately. They continue to do this for six or seven weeks, and the shores are again abandoned till the end of August, when a herd of young seals, of both sexes, comes on shore for about five or six weeks, and then retires to the water. The young are at first black; in a few weeks they become gray, and soon after obtain their coat of fur and hair."

When the South Shetland seals were first visited, they had no fear of men, and would rather seek than shun their society; they would even lie still while their neighbors were killed and skinned, but afterwards they acquired habits for counteracting danger, by placing themselves on rocks, from which they could, in a moment, precipitate themselves into the sea. The agility of these creatures is very great, and Captain Weddell says he has seen them often outrun a swift-footed seal-hunter, and escape. The opinion that these seals defend themselves by throwing stones at their pursuers with their tails, has no foundation in truth; it probably originated in the supposition that an involuntary act of the animal, growing out of its peculiar mode of progression, was an intentional one, of a belligerent character. When the seal propels itself along the stony beach, it draws its hind flappers forward, thereby shortening the body, and projecting itself by the tail, which, when relieved from the effort by the fore flippers, throws up a quantity of stones to the distance of some yards.

Genus *TRICHECHUS*. The learned and indefatigable missionary, Crantz, has supplied an excellent, though brief description of the walrus. "The head is oval, but the mouth is so small that I could not quite put my fist into it. On both lips, and on each side of the nose, is a kind of fungus-like skin, a hand's breadth, stuck with a plantation of monstrous bristles, that are a good span long, and as thick as straw; they are like a three-stranded cord, pell-mell, and give to the animal a majestic, though grim aspect. The nose is very little raised, and the eye is not larger than that of an ox. I could perceive no eyelid, and as I was first searching for the eye and temples, a Greenland boy pressed the skin, and out sprang the eyes; so that I found I could squeeze them in and out the depth of an inch; whence I might conclude that this creature had also a shelter for its eyes in stormy weather, by drawing them into a safe repository. I could scarcely find the little apparatus of the ears. Having no sharp incisors, it cannot catch fish and chew them like the seals; and the two long tusks or horns growing out of its face over the nose, and bending down over the mouth, so as almost to barricade it, seem to be more of an impediment than a help to it."

In addition to the above characteristic description, we will only say that the limbs are a kind of fin-like legs; the fore paws are from two to three feet in length, and being expansive, can be stretched to a considerable dis-

tancee ; the hind feet extend straight backwards, and together form a sort of tail fin, though they are not united, and their length corresponds to that of the fore paws.

T. Rosmarus. — This is the only species of which we have any description, and is familiarly known as the Morse, or Sea Horse. It has a seal-like appearance, and, indeed, possesses many of the characters, both physical and mental, of the *phocidæ*. The length of the walrus is from fifteen to twenty feet, and it exceeds in bulk, Cuvier states, that of the largest bulls. The color varies with age: the young are black; they then become brown, and gradually more and more pale, till in old age they become quite white. The tusks, which hang down over the mouth in a most singular manner, are from fifteen to thirty inches long, and weigh from five to ten pounds. They are whiter than the purest ivory, and are much esteemed for similar purposes. Besides their utility in procuring food, they are a powerful weapon of defence against its great enemies, the ice bear and sword-fish, and also enable the animal to raise his enormous carcass upon the ice, or rocky, precipitous shores.

The sea is the scene of the active life of the walruses, to which all their limbs are admirably adapted, and where they move with great velocity, equalling that of the whale itself. On the land, however, their movements are awkward, and apparently irksome, their gait being, according to Martens, "a kind of jerking; they can make considerable springs, and advance pretty rapidly, with the help of their teeth." Their food is of a various character, sea-weed (*fucus digitatus*), shrimps, craw-fish, and young seals. Sometimes, when on the land, they abstain from all food for many days; a peculiarity which we have witnessed in the seals. Lord Shuldon remarks on this point, — speaking of the walruses of the Gulf of St. Lawrence, — that they are in the habit of crawling up to the shore, at a convenient landing-place, and of remaining, sometimes fourteen days together, without food, when the weather is fair, but on the first appearance of rain, they retreat to the sea with great precipitation.

These creatures are of a very social nature, affectionate towards each other, and strongly devoted to their young. They herd together in vast numbers, sometimes amounting to thousands; thus Captain Cook relates: "At one o'clock we got entangled with the edge of the ice, on which lay an innumerable number of sea horses. They were lying in herds of many hundreds, huddled one over the other like swine, and were roaring or braying very loud, so that in the night, or in foggy weather, they gave us notice of the vicinity of the ice before we could see it. They were seldom in a hurry to get away till after they had once been fired at, when they would tumble over each other into the sea, in the utmost confusion." Taught the necessity

of caution by the persistent persecutions of man, they never assemble on the land or ice without placing sentinels to give an alarm on the appearance of the least sign of danger. Although docile and peaceable in the highest degree, they are the bravest of all the amphibious tribes. When attacked, they will first seek to escape; but retreat being cut off, they will fight with dauntless bravery, and woe to the assailant that is made to feel the lash of their mighty tusks. In illustration of their gallantry, we will introduce a passage from Lord Mulgrave, who encountered them near an island lying north of Spitzbergen. "Two officers engaged in a battle with a walrus, from which they came off with little honor. The animal, being alone, was wounded in the first instance; but, plunging into the deep, he obtained a reënforcement of his fellows, who made a united attack upon the boat, wresting an oar from one of the men, and had nearly upset her, when another boat came to their assistance." Sir Edward Parry gives them a similar character. "We saw about two hundred, lying piled, as usual, over each other, on the loose drift ice. A boat's crew from both the Fury and the Heela proceeded to the attack, but these gallant amphibia, some with their cubs mounted on their backs, made a most desperate resistance, and one of them tore the planks of a boat in two or three places. Three only were killed." Another intelligent observer says, "When I wounded one, the others speedily surrounded the boat; and whilst some endeavored to pierce it with their tusks, others raised themselves out of the water, and did everything they could to board it."

Their mutual kindness and fraternal affection are also strikingly manifest when engaged in battle. They will protect each other, and when the encounter is over, will carefully bear away such of the slain as are within their reach, raising them often tenderly out of the water as if for air. On the strength of their parental attachment, Captain Cook remarks, "The female will defend the young one to the very last, and at the expense of her own life, whether in the water or on the ice. Nor will the young one quit the dam, though she be dead." Again he says, "In the afternoon we hoisted out the boats, and sent them in pursuit of the sea horses that surrounded us. Our people were more successful than they had been before, returning with three large ones and a young one. The gentlemen who went with this expedition were witnesses of several remarkable instances of parental affection in those animals. On the approach of the boats towards the ice, they all took their cubs under them, and tried to escape with them into the sea. Several, whose young were killed and wounded, and left floating on the surface, rose again and carried them down, sometimes just as our people were going to take them into the boat; and they might be traced bearing them to a great distance through the water, which was colored with

their blood. We afterwards observed them bringing them up at times above the surface, as if for respiration, and again diving under, with dreadful bellowing. The female, in particular, whose young had been destroyed and taken into the boat, became so enraged that she attacked the cutter, and stuck her tusks through the bottom of it."

From a very early period the walrus has been hunted for its teeth, and oil, and skin. The oil is said to be of greater value than that of the whale; the average yield of each animal is about thirty gallons. The tusks furnish an ivory superior to that of the elephant, and the skins are applied to a variety of useful purposes, such as the manufacture of harness, carriages, and glue. Zorgdrager states that a Greenlander will never venture to attack a walrus alone, but will require the assistance of three or four companions, who are acquainted with all the habits of the creature, and especially its mode of warfare. They employ a harpoon, which, however, from the toughness of the hide, is an uncertain weapon, as it is not easily fixed. When the instrument holds, the animal is allowed to swim about till it is wearied, when they try to secure it, and kill it with lances. But even under these circumstances the conquest is attended with great difficulty, as the walrus, aware of its peril, arouses himself for the conflict, and puts forth all his gigantic strength. In this crisis the hunters usually aim at the eyes, which causes the animal to turn its head, when a fatal blow is struck at the breast.

Admiral Beechey gives a vivid account of a battle with an army of sea horses in Magdalena Bay, Spitzbergen. Several herds of them had, one evening, crawled upon the ice, to enjoy the fine weather and rest themselves. The boats, properly equipped, and manned with some of the officers and seamen, pushed off in pursuit of them. The first herd which was selected disappointed the sportsmen, but another was so intent upon its gambols that the sentinel absolutely forgot his duty, and several of the crew managed to effect a landing upon the ice without any alarm being given to the animals; as soon, however, as the first musket was fired, the affrighted group made such a desperate rush towards the edge of the ice, that they nearly overturned the whole assailing party, purposely stationed there to intercept them. The seamen, finding this charge more formidable than they expected, were obliged to separate, to allow their opponents to pass through their ranks; and being thus, in their turn, taken by surprise, they suffered them, almost unmolested, to perform their somersets towards the sea. What with their uncertain movements, the extreme toughness of their skin, and the respectful distance at which the men were obliged to keep to avoid the lashing of the head and tusks of the animals, it was indeed no easy task to inflict any serious injury upon them. One, however, was desperately

wounded in the head with a ball, and the mate of the brig, being determined, if possible, to secure his prey, resolutely struck his tomahawk into his skull ; but the enraged animal, with a twist of his head, sent the weapon whirling in the air, and then lashing his neck, as though he would destroy with his immense tusks everything that came in his way, effected his escape to the water. The seamen followed, and pushed off in their boats ; but the walruses, finding themselves more at home now than on the ice, in their turn became the assailants. They rose in great numbers about the boats, snorting with rage, and rushing upon them, so that it was with the utmost difficulty they were prevented from upsetting or staving them by placing their tusks upon the gunwales, or by striking at them with their heads. It was the opinion of the seamen that in this assault the walruses were led on by one animal in particular, a much larger and more formidable beast than any of the others, and they directed their attention more especially towards him ; but he withstood all the blows of their tomahawks without flinching, and his thick, strong hide resisted the entry of the whale-lances, which, unfortunately, were not very sharp, and soon bent double. The herd was so numerous, and their attacks so incessant, that there was not time to load a musket, which, indeed, was the only effectual mode of seriously injuring them. The purser fortunately had his gun loaded, and the whole now being nearly exhausted with chopping and striking at their assailants, he snatched it up, and thrusting the muzzle down the throat of the leader, fired into his bowels. The wound proved mortal, and the animal fell back amongst his companions, who immediately desisted from the attack, assembled round him, and in a moment quitted the boat, swimming away as hard as they could, with their leader, whom they actually bore up with their tusks, and assiduously preserved from sinking. After the discharge of the purser's gun, there remained of all the herd but one little assailant, which the seamen, out of compassion, were unwilling to molest. This young animal had been seen fighting by the side of the leader, and from the protection afforded it by its courageous patron, was imagined to be one of its young. This little animal had no tusks, but it swam violently against the boat, and struck her with its head, and, indeed, would have stove her, had it not been kept off by whale-lances, some of which made deep incisions in its young sides. These, however, had no immediate effect ; the attack was continued, and the heroic little walrus, though disfigured with wounds, even crawled upon the ice in pursuit of the seamen, who had returned thither, until one of them, out of pity, put an end to its sufferings.

SEALS AND WALRUSES THE ORIGINAL TYPE OF THE MERMAIDS.—In all ages of the world, down to quite a recent period, the belief generally prevailed that the sea contained a race of beings with bodies human from

the waist up, and passing into the fish form below, being endowed with superior powers, capable of calming the raging billows, seducing the luckless sailor, and charming him to his destruction. The ancient poets constantly refer to them, under the name of *tritons*, *sirens*, and *sea-nymphs*, and relate marvellous tales of their powers, almost supernatural, and their exploits. The nations of the north of Europe entertained this faith more profoundly even than those of the south, and their poetry abounds with allusions to, and descriptions of, these ideal beings, which their fruitful imaginations invested with magical prerogatives. There is no question but that the seal and walrus were the original type and source from which fancy created this wondrous race. All the descriptions of mermaids which have been recorded clearly indicate this. In Hibbert's "Shetland Islands" we find the following graphic account of the splendor and magnificence of the mermaid's world, and of some of her extraordinary habits: "Beneath the depths of the ocean an atmosphere exists adapted to the respiring organs of certain beings, resembling in form the human race, who are possessed of surpassing beauty, of limited supernatural powers, and liable to the incidents of death. They dwell in a wide territory of the globe, far below the region of fishes, over which the sea, like the cloudy canopy of our sky, loftily rolls, and there they possess habitations constructed of the pearly and coralline productions of the ocean. Having lungs not adapted to a watery medium, but to the nature of atmospheric air, it would be impossible for them to pass through the volume of waters that intervenes between the submarine and supramarine world, were it not for their extraordinary power of entering the skin of some animal capable of existing in the sea. One shape they put on is that of an animal human above the waist, yet terminating below in the tail of a fish; and thus possessing an amphibious nature, they are enabled to exist, not only in the ocean, but to land on the shores, where they frequently lighten themselves of their sea dress, resume their proper shape, and with much curiosity examine the nature of this upper world."

In 1823, Mr. Edmonston, the well-known naturalist, and generally a correct observer, sent to the professor of natural history in the University of Edinburgh the following communication, relating to an event that had recently occurred: "A short while ago a fishing-boat, off the Island of Yell, one of the Shetland group, captured a mermaid, which had got entangled in the lines. The animal was about three feet long, the upper part of the body resembling the human, with protuberant mammae, like a woman; the face, forehead, and neck were short, and resembling those of a monkey; the arms, which were small, were kept folded across the breast; the fingers were distinct, not webbed; a few stiff, long bristles were on the top of the head, extending down to the shoulders, and these it could erect or depress at

pleasure, something like a crest. The inferior part of the body was like a fish. The skin was smooth, and of a gray color. It offered no resistance, nor attempted to bite, but uttered a low, plaintive sound. The crew, six in number, took it into their boat, but superstition getting the better of curiosity, they returned it to its native element. It instantly dived, descending in a perpendicular direction."

Commenting on the above statement, Mr. Edmonston remarks, "That a very peculiar animal has been taken, no one can doubt. It was seen and handled by six men, on one occasion, and for some time, not one of whom dreams of a doubt of its being a mermaid. If it were supposed that their fears magnified its resemblance to the human form, it must, at all events, be admitted that there was some ground for exciting these fears. But no such fears were likely to be entertained; for the mermaid is not an object of terror to the fisherman; it is rather a welcome guest, and danger is apprehended only from its experiencing bad treatment. The usual resources of scepticism, that the seals and other sea animals, appearing under certain circumstances, operating upon an excited imagination, and so producing ocular illusion, cannot avail here. It is quite impossible that six Shetland fishermen could commit such a mistake."

We should conclude from the above that Mr. Edmonston was quite a believer in the reality of this mythical race; but with all due respect for the opinion of so distinguished a man, we must say that we see nothing whatever in the report of those fishermen which would lead to the belief that the animal was other than a seal. They were ignorant men, and probably never before had had an opportunity of inspecting a specimen of the seal tribe immediately under their eyes. They were superstitious, too, and apparently much moved by fear, as they hastened to rid themselves of the creature as speedily as possible.

Pontoppidan's Natural History of Norway supplies the following information in regard to an animal which was called a merman, observed by some sailors about a mile from the coast of Denmark, near Landscrone. It appeared at first like a dead body floating upon the water. When they came within seven or eight fathoms, it still was motionless; on advancing a few feet farther towards it, the merman instantly sunk, but immediately reappeared nearly in the same place. Through fear they then lay still, and suffered the boat to float, that they might the better examine the monster, which, by the help of the current, came nearer and nearer to them. He turned his face and stared at them, which gave them a good opportunity for observing him narrowly. He stood in the same place for seven or eight minutes, and was seen above the water breast high. At last they grew apprehensive of some danger, and began to retire; upon which the animal

blew up his cheeks, made a kind of roaring noise, and then dived into the sea. The sailors further described their merman as resembling an old man, strong-limbed, with broad shoulders, but his arms they could not see. His head was small in proportion to his body, and had short, curled, black hair, which did not reach below his ears; his eyes lay deep in his head, and he had a meagre face, black beard; about the body and downwards he was pointed quite like a fish.

It is a notable fact that in both of the instances which we have mentioned, nothing like arms or legs were discovered on the monsters; in the first, short appendages, folded on the breast, are spoken of, evidently flippers, whilst in the second, nothing of the kind was observed at all. The latter animal, standing in the wave, and looking curiously about, cannot but recall the remark of Captain Scoresby, heretofore referred to. "I have myself seen a sea horse under such circumstances that it required but little stretch of imagination to mistake it for a human being, and the surgeon actually reported to me that he had seen a man with his head above the water." To this we may add that the walrus, before the appearance of its tusks, presents a countenance which does actually bear some resemblance to the human, and when these animals raise their heads out of the water and gaze attentively, as is their habit, on ships or other passing objects, it is not strange that they should be mistaken for men, and thus give origin to the fables of mermaids and mermen.

The southern hemisphere, also, has its mermaid, if we can credit a statement of Captain Weddell. It is to the following effect: A boat's crew being employed on Hall's Island, one of them, left to take care of some produce, was surprised by the appearance of an animal which had a musical voice. The sailor had lain down, and about ten o'clock he heard a noise that resembled human cries; and as daylight in these latitudes never disappears at that season of the year when this incident took place, he rose and looked round; but, on seeing no person, he returned to bed. Presently he heard the noise again, rose a second time, but still saw nothing. Conceiving, however, the possibility of a boat being upset, and that some of the crew might be clinging to the rocks, he walked along the beach a few steps, and heard the sound more distinctly, but in a musical strain. Upon searching round, he saw an object lying on a rock a dozen yards from the shore, at which he was somewhat frightened. The face and shoulders appeared to be of human form, and of a reddish color; over the shoulders hung long, green hair; the tail resembled that of a seal, but the extremities of the arms he could not see distinctly. The creature continued its musical exercise about two minutes, when it perceived him and disappeared in the water. The sailor told his story in so positive and earnest a manner, that he must

either have seen the animal he described, or it must have been the effect of a disturbed imagination.

Another incident of the kind is related by Captain Colnett. "A very singular circumstance occurred off the coast of Chili, in latitude 24° south, which, as it spread some alarm among my people, and awakened their superstitious apprehensions, I shall mention. About eight o'clock in the evening an animal rose alongside the ship, and uttered such shrieks and tones of lamentation, so much like those produced by the female human voice when expressing the deepest distress, as to occasion no small degree of alarm among those who first heard it. These cries lasted for upwards of three hours, and seemed to increase as the ship sailed from it. I never heard any noise whatever that approached so near those sounds which proceed from the organs of utterance in the human species. One of the men was so panic-struck, that had he been much longer in landing he would certainly have died."

In this last instance no description of the appearance, the size, color, or form of the animal is given. It was evidently some species of seal, as was also that observed by Captain Weddell's sailor. The lamentations and shrieks mentioned by Captain Colnett can easily be recognized as the cries of several species of seals, and the whining murmurs of one of these animals were undoubtedly fashioned into music by the excited imagination of the sailor. Men are naturally prone to the marvellous, and unusual sights and sounds have always furnished the materials out of which a poetic fancy has woven its wonderful legends; and though banished from science, the mermaid will continue to live in poetry so long as the immortal verses of Shakespeare and Goethe are known and read. The passage of the great dramatist, commencing, "I heard a mermaid on a dolphin's back uttering such duleet and harmonious breath," and the poem of the great German, entitled "The Fisher," will secure the mermaid a perpetual existence in the realms of song.

ORDER VI.—CETACEA.

This great order, and interesting from many points of view, is divided into two families, the *Herbivorous Cete*, and the *True Whales*; the first of which naturally follows the Amphibians, and in some particulars nearly touches the circle of that great family. The Cetaceans have the anterior extremities shaped into flippers, and the posterior undivided, but forming one horizontal, flattened tail. They are without a pelvis, having barely two bones, suspended within the muscles, as a rudiment of it.

Family I. THE HERBIVOROUS CETE. They differ from the True Whales in the absence of blow-holes, but have nostrils in the snout opening upwards. Their herbivorous character is determined by their teeth, which have flat crowns. There is scarcely any neck to separate the head from the body, which is fish-like, having a horizontal tail instead of posterior extremities. Their mammae are pectoral, and their skin is nearly destitute of hair. This group is divided into three genera, the first of which delights to forage and sport in the warm, shallow bays of the West India Islands and South America, while the second seeks the cold regions of the north, and Nature has established the home of the third in the Oriental Seas.

Genus *MANATUS*.—The chief generic character of the *Manatus* is derived from its swimming paws, which have four flat nails attached to the fin. The tail is oval and long, being nearly one fourth of the length of the body.

M. Americanus.—The Manatee of the West Indies. The common length of this animal is about fifteen feet, although it often attains and even surpasses the dimensions of twenty feet, with a weight of not less than three or four tons. The body is of a grayish color; the skin thick, strong, and coarse grained, having a few scattered and slender hairs upon it, which are the most numerous under the paws and at the angles of the mouth. This species is found in the West Indies, and in many of the rivers and creeks of South America. Numerous herds of them formerly frequented the mouths of the great Rivers Orinoco and Amazon, often ascending hundreds of miles, visiting their tributary streams, and animating the fresh-water lakes connected with them by their sportive leapings; for it seems they amuse themselves, like the true whales, by often throwing themselves far out of the water, apparently remaining suspended for a moment in the air.

They once abounded near Cayenne, and according to the historian Binet, their flesh, which was deemed excellent food, was daily sold in the market for about six cents a pound; but constant persecution either exterminated them, or compelled them to seek some safer retreat. All authors agree in testifying to their delicacy as an article of food, affirming that it has, when roasted, the flavor of pork and the taste of veal. In capturing them, they are approached, according to the statement of Oviedo, in a small boat, and struck with a large harpoon, to which a strong and long cord is attached. As soon as struck they make great efforts to escape, carrying the harpoon and cord along with them; to the extremity of the latter a cork or piece of light wood is affixed, which serves as a buoy, and indicates the movements of the wounded animal. The victim being thus seized, its assailants return to the shore, bringing with them the end of the rope, and when the manatee becomes exhausted, they draw it in and despatch it.

In habit and disposition these animals are social and amiable, and, accord-

ing to Buffon, possess a considerable degree of intelligence. They do not naturally shun man, but are free in approaching, and follow him with confidence. They also appear to be bound together by a strong feeling of fraternity, associating in troops, with the young placed in the centre for better security, and when danger threatens, each is ready to bear its share in mutual defence or attack. When one has been struck with a harpoon, others will tear the weapon from the flesh; and usually, if the cubs are taken, the mother ceases to care for her own safety, while if the mother is taken, the young will follow her to the shore and to death.

M. Senegalensis. — This species is smaller than the foregoing, scarcely ever surpassing fifteen feet in length. It frequents the rivers and shores of Western Africa, and particularly of Senegal. It is covered with fat, which adheres to the skin like blubber. The specific character which separates this species from the former is found in the structure of the cranium.

Genus STELLERUS. The paws of this genus are destitute of nails; the jaws have each one tooth, of a peculiar kind; the skin is remarkably thick and hard. The shores of Behring's Straits and the Bay of Awatscha are given as the habitat of the Stelleri.

Stellerus Borealis. — The head of this species is small, oblong, and obtuse. The nostrils are at the end of the snout; the two heavy tubercles, which Cuvier designates as teeth of a peculiar kind, are not set in the bone, but in the soft parts; there is no external ear; the eyes are deep-set and small, with a livid ball and black iris. But the most remarkable character of this animal is its skin, which is knotty and rugged as the bark of an aged oak, resembling in its substance the hoof of cattle. It is so hard that an axe will scarcely penetrate its horny texture, and appears to have been wisely and benevolently provided by the Creator as a protection for these harmless creatures against the rigors and dangers of the dreary and desolate regions where Nature has fixed their home. It shields them in winter from the loose fragments of ice, among which they feed, and the sharp-pointed rocks, against which they are often dashed by furious storms, and in the summer, from the scorching rays of the sun. They have two pectoral mammae, and their milk resembles that of the ewe. The largest of them measure twenty-eight or thirty feet in length, and weigh about eight thousand pounds.

They feed with the head under water, quite inattentive to the boats, or anything that passes around them, moving and swimming gently after one another, sometimes with a great portion of the back out of the water. When they raise their heads above the surface, as they do at frequent intervals for respiration, they make a noise like the snorting of horses. The people at Behring's Island capture them by a great hook, fastened to a long

rope, which is taken into the boat. When an animal is struck, the loose end of the rope is conveyed to the shore, where it is seized by a large number of men, who, with great difficulty, drag it to the beach. The poor creature makes the strongest resistance, assisted by its faithful companions, and clinging to the rocks with all its power.

Steller describes them as frequenting the shallow waters near the shores, and the estuaries of the rivers, where they appear in great troops. The older surround the younger, apparently in the way of protection. They are so gentle as to suffer themselves to be handled; if roughly treated they remove towards the sea, but soon forget the injury and return. Sometimes they appear in families near one another, each of which consists of a male and a female, one half grown, and a cub; but the families often unite, and form vast herds. They are extremely harmless and innocent in their manners, and strongly attached to one another. When one is hooked, the whole drove will attempt its rescue, some striving to overturn the boat by going beneath it, others flinging themselves with great violence on the rope in order to break it, and others will endeavor to force the instrument from its hold. Their conjugal affection is extraordinary. On one occasion a male, after using all its endeavors to relieve its mate, followed it to the very shore, whence no blows could compel it to depart; and after she was killed and conveyed away, waited three days in the expectation that she would return to him. In their mental and moral characters they bear a remarkable resemblance to many of the seals; like the latter, following man by a natural instinct, and like children, looking to him for sympathy and protection rather than injury and persecution.

Genus DUGUNGUS. Here we find a nearer approach to the true whale. The head, general form, and forked tail betray a cetacean relationship. There are no canine teeth; the molars are twelve in number, six in each jaw, and placed far back on the horizontal portion. As the animal is found in the Pacific Ocean, on the coast of New Holland, and in the Red Sea, there are undoubtedly several species, but none of them appear to be well known, with the exception of the one we are about to introduce to the reader.

D. Indicus. — The Dugong of India. We are indebted to Sir Thomas Raffles for many interesting details regarding the natural history of this species. The male attains the length of eighteen or twenty feet, the body is whale-like, and the paws are without nails. The skin is smooth and thick, and destitute of blubber; the mammae are placed on the chest, under the fins; the color is bluish above, and white beneath; a few hairs are thinly scattered over the body. The Dugong feeds on the sea vegetables which grow on the bottoms of the inlets of the ocean or of the shallow rivers, in

the same manner as a cow browses in a meadow. Sir Thomas remarks that its flesh afforded much satisfaction on the table, as it proved to be most excellent beef. The natives of Sumatra assert that it never frequents the land or the fresh water, but loves best to roam and feed in the shallows of the sea, where the water is only two or three fathoms deep. During a six months' possession of Singapore by the English, our author observes that only four of these animals were taken; but the greatest number is said to be caught during the northern monsoon, near the mouth of the Johore River, where the sea is the calmest. They are usually taken by spearing at night, when the animals announce their approach by the peculiar snuffling noise which they make at the surface of the water. The hunters first seize and elevate the tail, thereby rendering the animal utterly powerless. They are seldom caught above eight or nine feet in length; the larger ones, by their superior strength, invariably escape when attacked.

The Malays call the dugong a royal fish, and the king claims all that are taken. The affection of the mother for its young is as strikingly manifested as in the other genera of this family; and this peculiar habit appears to have made a deep impression upon the imagination of the Malays, who often allude to the animal as an example of maternal virtue and affection. If a young one is taken, the mother yields with little or no resistance. The cry of the young is short and sharp, and frequently repeated. It will shed tears like the seals. These tears the people carefully preserve as a charm, the possession of which is supposed to secure the affection of those to whom they are attached, in the same manner as they attract the mother to her young — a beautiful idea, and eminently poetical.

Family II. THE TRUE CETACEA. No creatures which God has made are more calculated to excite our wonder and awe, as well as admiration, than the whales, those gigantic inhabitants of the deep, whose size far surpasses that of any other known animal, either of the land or sea, and whose entire organization is so beautifully and perfectly adapted to the element where they have their existence. They are Mammalians, and in their anatomical and physiological structure somewhat resemble man; yet as their home is wholly in the ocean, they must have some peculiar adaptations to that mode of life. They respire through lungs, and are obliged to come to the surface to breathe; but Nature has provided them with a curious organ, which enables some of the larger species to remain under the water one and even two hours without suffering any inconvenience. This peculiar structure, which was first pointed out by the celebrated John Hunter, is a grand reservoir of arterial blood, lining a large portion of the interior of the chest, deriving its supply of the vital fluid from the vessels near the heart, and

pouring it into the general circulation, as it is required, and thus, for a time, superseding the necessity of respiration.

The anatomy of their pectoral fins bears a great resemblance to that of the human arm, as the osseous structure of those organs equally consists of a shoulder blade, an upper arm, a radius and ulna, and five fingers. These appendages are employed to balance the animal, and to direct its course as it rushes through the water; they also afford protection to its young, and the female carries her cub under them, as fondly as a human mother bears her child in her arms.

But the most remarkable external feature is an immense horizontal tail, of prodigious power, by which even the most gigantic varieties are able to force themselves to a considerable height out of the water. Mr. Hunter observes that the mode in which the tail is constructed is, perhaps, as beautiful as to mechanism as any other part of the body, being principally composed of three layers of tendonous fibres. It comprises, in the larger whales, in a single surface, from eighty to one hundred square feet; its length is only five or six, but its width is from eighteen to twenty-six. In its form it is semi-lunar and flat; its motions rapid and universal; its strength immense. It is nearly the sole instrument of defence as well as of motion. The greatest velocity is produced by powerful strokes against the water, impressed alternately upwards and downwards; but a slower motion is produced by cutting the water laterally and obliquely downwards, in a similar manner as a boat is forced along by a single oar in the operation of sculling. So great is the speed with which they move, that they have been very appropriately denominated the birds of the sea.

The head is of enormous size, forming about one third of the whole body; the mouth, when open, is as large as the cabin of a ship; instead of teeth, it is furnished with about five hundred laminae of whalebone, ranged side by side, two thirds of an inch apart, and resembling a frame of saws in a saw-mill. Their internal edges are covered with fringes of hair; externally they are curved and flattened down, so as to present a smooth surface to the lips. In addition to these, there are suspended from the palate many other small laminae of the thickness of a quill, a few inches long, likewise terminating in a fringe. Thus the whole roof of the mouth seems lined with shaggy fur, under which lies the soft, spongy, and non-projectile tongue, often ten feet broad, and eighteen feet long. This strangely furnished organ is most beautifully adapted as a means of procuring the peculiar food on which the animal subsists. This consists of very minute animals, of the *Medusa* kind, with which its pasture-grounds, as they are termed, in the northern seas abound. In getting its food, the whale moves rapidly through the ocean with open mouth, and catches millions of these little creatures in

the hairy fringes of this mighty net, which, after being properly mashed by the tongue, it conveys into its stomach, to nourish its monstrous form. It seems almost incredible that an animal so gigantic should be incapable of swallowing the smallest morsel of food common to the most insignificant of the mammalians, and should owe its enormous fatness to such singular nourishment.

The skin of the whale also deserves attention, not only on account of its curious structure, but for the singularly useful purposes which it serves. It was formerly held that this organ and the blubber were distinct parts of the body, as the skin of the hog is distinct from the layer of fat that underlies it; but this opinion has been proved to be incorrect. Professor Jacob, of Dublin, has shown that there is no distinction whatever between the outer skin and the blubber, and affirms that the latter is nothing more than modified skin. On this important point we choose to give his statement in his own words, as recorded in the *Dublin Phil. Journal*. "That structure in which the oil is deposited, denominated blubber, is the true skin, modified certainly for the purpose of holding this fluid oil, but still being the true skin. Upon close examination, it is found to consist of an interlacement of fibres crossing each other in every direction, as in the common skin, but more open in texture, to leave room for the oil. Taking the hog as an example of an animal covered with a layer of fat, we find that we can raise the true skin without any difficulty, leaving a thick layer of cellular membrane, loaded with fat, of the same nature as that of other parts of the body; on the contrary, in the whale it is altogether impossible to raise any layer of skin distinct from the rest of the blubber, however thick it may be; and in flensing a whale, the operator removes this blubber or skin from the muscular parts beneath, merely dividing with his spade the connecting cellular membrane."

We see here another remarkable exhibition of the wisdom, and more especially of the benevolence of the Creator, and of the parental care with which he surrounds all his creatures, fitting them exactly for the peculiar existence which he has ordained for them. Whales often descend to a great depth in the ocean, where the body is exposed to a pressure from the superincumbent waters, so mighty that it can scarcely be described, but clothed in this blubber hide, sometimes between one and two feet thick, soft, flexible, and elastic, like India rubber, it is able to resist this tremendous pressure, which otherwise would destroy it. Besides, the animal being warm-blooded, could not exist in the cold and icy seas of the north, were it not for the protection afforded by this thick wrapper, which, being a bad conductor of caloric, preserves the animal heat, and defends the body from the freezing cold without. This enormous bulk of fat, weighing many tons, instead of being an

encumbrance to the whale, insures greater buoyancy, lightness, and consequently activity, from its being specifically lighter than the waters of the ocean.

This order has no nostrils proper, but in place of them tubes, which open on the top of the head, called *blow-holes* or *spiracles*, through which the air is received into the lungs, for the purpose of respiration. As these tubes are liable to be filled with water whenever the whale dives, they are provided at their lower terminus with a set of valves, which effectually keep the water from entering the lungs, and thus destroying the animal.

These tubes, or blow-holes, are the apparatus by which the act of *spouting*, or blowing, is performed. Although all the species possess this peculiar mechanism, they do not appear equally to have the power of employing it in this manner. This operation is most conspicuous in the larger genera, quite marked in the intermediate, while the smaller have very rarely, if ever, been seen to spout. As to the precise character and object of these spoutings, there are so many conflicting opinions among the authors, that it is impossible to arrive at any definite conclusion; nor is it decided whether the voice of the whale, or its power of bellowing, is in any way connected with the spiracles. In regard to this latter capacity there is also a great difference of opinion. Mr. Scoresby asserts that "whales have no voice;" but on the contrary, Cuvier remarks, "As to their power of uttering cries and bellowings, more or less acute, we cannot, after the assertions which have been made by those who heard them, any longer entertain a doubt." The following was one of the facts reported to this illustrious naturalist, and which elicited the above observation: "In January, 1812, some fishermen of Paimpol, observing a number of small whales, of the porpoise genus, at some distance from shore, supplied themselves with arms, and gave chase, endeavoring to drive them towards the land. They succeeded in frightening them, and hunted one of the smallest from the deep. When stranded in shallow water it began to utter cries, which speedily brought others, among the first of which its mother was supposed to be one. She, however, was accompanied by many; the cries were augmented as the number of those in peril increased, and finally they all, to the number of seventy, violently precipitated themselves among the shallows, and were taken." Another instance occurred on the coast of La Vendee, in 1822, and is thus related by Orbigny: "In the month of June many of the inhabitants of Arguillon were aroused at 11 P. M. by a dreadful noise, which evidently proceeded from the sea-shore, and which they compared to the bellowing of a hundred bulls. Some of the most courageous of them went to discover what it was; but, terrified by the extraordinary noise, more appalling during the silence of the night, and increased by heavy blows on land and sea, they returned to their homes. When day appeared, they saw four great animals struggling

with death, and uttering frightful cries." These animals were undoubtedly whales, of some large species, which had been driven by the tempest upon the shoals, whence they could not extricate themselves, and consequently, according to their habit, raised a mighty voice, which was at the same time a note of terror and a call to their fellows for aid. It is well known that whales have some extraordinary means of almost instant communication with each other under water, to the extent even of six or seven miles; and as water is a better conductor of sound than the air, it may be that this inter-communication is effected by the voice. A most wonderful provision of Nature, truly! Imagine these huge creatures holding converse with each other beneath the wave, though miles apart, and when attacked by some formidable foe, sending the word of warning through the briny medium to their far-off' companions, and summoning them to hasten to their assistance!

In regard to the organs of sense in this order, and to what extent they are possessed, naturalists are not agreed. Respecting the sense of smell, for example, the early whalemen and the authors assert that the faculty exists in all the species in great perfection. Anderson, who has given us an excellent account of Greenland and Iceland, relates that when the inhabitants of the Ferrie Isles pereceived that their boats were pursued by the sperm whale, they threw some castor overboard, which made him sink to the bottom like a stone. Ginger was celebrated for similar virtues, and also sulphur, chalk, and the blood of animals; and yet the anatomists affirm that in most of the species there is no appearance of the olfactory nerve, and even Cuvier, in 1823, remarked that the cetaceans had no olfactory nerve, nor the usual organ of smell. It is now, however, generally conceded that the true whales and the rorquals are endowed with this faculty, while in all the rest it is wanting. We are not quite sure that this opinion should be accepted as absolutely correct.

The organs of *vision* appear to be better adapted to the inspection of submarine objects than of those above the surface. Speaking of the Greenland whales, Scoresby says that above the water they do not see far, but when beneath, the sense of seeing is very acute, since they can discover one another, in clear water, at an amazing distance. They appear to be well furnished, also, with the faculty of *hearing*; but the senses of *taste* and *touch* are said to be very obtuse, if not wholly wanting. Their mental powers, dispositions, and other interesting particulars regarding their peculiar habits and instincts, will be described when we come to narrate the history of the several species. We will here, therefore, only observe that they are sociable and amiable, mutually and freely rendering each other assistance when in danger, and strongly attached to their offspring, which the mothers nurse and rear with extraordinary care and tenderness.

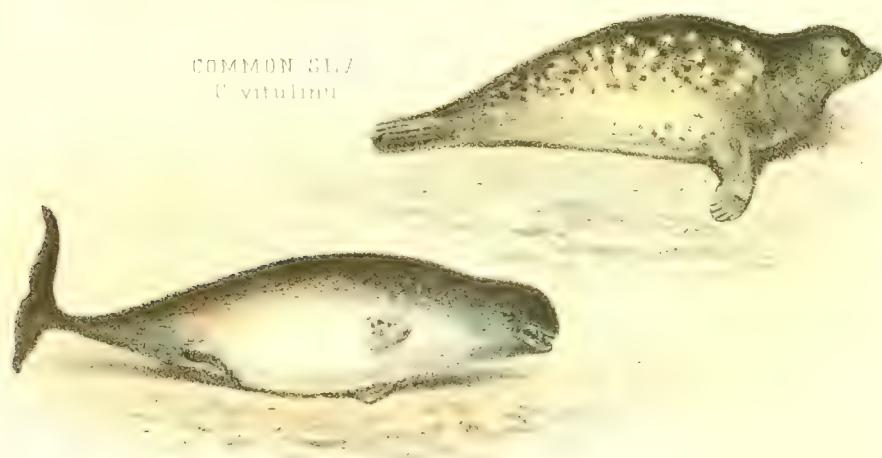




PORPOISE
P. Communis



COMMON SEAL
C. vitulina



The flesh of the whale is generally coarse and tough, but that of some of the species is not unpalatable when properly cooked and seasoned. I have myself eaten portions of the tail, prepared with vinegar, pepper, and salt, and also minced pies, made in the Yankee fashion, of the flesh, and found them a very agreeable food. Speaking of the white whale, Hans Egede says, that it is as well-tasted as any pork, and the fins and tail, pickled and sauced, are very good eating.

The history of whale-catching dates from a very early period; but not until more recent times did the business become an extensive and profitable branch of industry. In this country, Nantucket took the lead for many years, and employed a large number of ships, and barks, and seamen in the enterprise, which was prosecuted with considerable vigor and success; but latterly New Bedford has appeared to monopolize the business, and sends out annually a large fleet of vessels to the Pacific, and also to the Greenland seas, and has met with such success, that the city, in point of opulence, is one of the first, in proportion to its size, in the United States. New London, Conn., also is quite largely engaged in the enterprise, which generally has proved successful, returning large profits to those who have invested their capital in the business. Still later, the enterprising town of Provincetown, on Cape Cod, has entered the lists with much energy, and has a considerable number of vessels, of various size, afloat; and the hardy and intelligent mariners of the Cape have won a high reputation for their skill and prudence in pursuing the hazardous undertaking.

We need not say that these huge mammalians of the ocean are hunted for their valuable products, the oil and whalebone, which are applied to numerous uses, and constitute most important articles of commerce and trade. The Americans engaged in the "*whaling*" business as early as 1690, and prosecuted it with more ardor and success than any other people. For many years our own seas furnished an abundant supply of the animal; but when these were exhausted, our bold mariners sought their prey in distant oceans, and the ships of the colonists were seen alike among the icebergs of the arctic circle and the frozen regions of the southern pble. So distinguished had our whalers already become at the time of our great struggle for independence, that Mr. Burke thus eloquently alludes to them in his celebrated speech before the British Parliament: "While we are carrying on the whale-fishery under the arctic circle, we hear that they have pierc'd into the opposite region of polar cold; that they are at the antipodes, and engaged under the frozen serpent of the south. Falkland Island, which seems too remote and too romantic an object for the grasp of national ambition, is but a stage and resting-place for their victorious industry. Nor is the equatorial heat more discouraging to them than the accumulated winter of both the poles.

We learn that when some of them draw the line or strike the harpoon on the coast of Africa, others run the longitude, and pursue their gigantic game along the coast of Brazil. No sea but what is vexed with their fisheries. No climate that is not witness of their toil. Neither the perseverance of Holland, nor the dexterous and firm sagacity of English enterprise, ever carried this most perilous mode of hardy industry to the extent to which it has been pursued by this recent people, a people who are yet in the gristle, and not hardened into manhood."

The first attempts of the English in whale-fishing dates as far back as 1594, when some ships were sent out to Cape Breton for morse and whale fishing.

The fishing proved unsuccesful, but they found on an island eight hundred whale fins, or whalebone, part of the cargo of a Biscayan ship, wrecked there three years before, which they put on board and brought home. This was the first time this substance was imported into England.

Huyl took the lead in the Greenland whale fishery in 1598, thirteen years after the first company for that purpose had been formed in Amsterdam; and as both maritime nations gave it every encouragement, not only on account of its profits, but also from considering it as one of the best nurseries for their seamen, it gradually grew to a very important branch of business. Some idea may be formed of the extent to which the Dutch engaged in the whale fishery during the last century, by stating, that for a period of forty-six years preceding 1722, five thousand eight hundred and eighty-six ships were engaged in it, and captured thirty-two thousand nine hundred and seven whales.

In the year 1788, two hundred and twenty-two English vessels were engaged in the northern fishery.

The earliest period at which we find the pursuit of the sperm whale conducted upon a scientific plan is about 1690, when it was commenced by the American colonists. In 1775 ships were first sent out from ports of Great Britain, but for some years it was necessary to appoint an American commander and harpooner, until competent officers could be reared. At the same early date the sperm fishery was chiefly prosecuted in the Atlantic; but Messrs. Enderby's ship "Emilia" having rounded Cape Horn in 1788, first carried the sperm whale fishery into the Pacific, where its success opened a wide and fruitful field for future exertions. As the seamen became better acquainted with the South Sea, many valuable resorts were discovered. In 1819 the "Syren" (British) first carried on the fishery in the western parts of that great ocean, and in the year 1848 the American whaler "Superior," Captain Roys, penetrated through Behring's Straits into the Iey Sea, and opened the fishery in those remote waters. The year after, no less than six

hundred and fifty whalers, manned by thirteen thousand five hundred seamen, were sent out. One of the causes of our success may be, that while the whale trade in England is carried on by men of large capital, who are the sole proprietors of the ship, the American interest in a vessel is often held by many men of small capital, and not unfrequently by the commander and officers.

The Australian colonies also, being most conveniently situated for the purpose, fit out many ships for the business, which is besides conducted in several permanent stations along the coast of New Zealand.

Whale charts have of late years been drawn, on which the best fishing grounds, at different seasons, are delineated. These maps are not only useful guides for the whalers, but promise the future solution of the still undecided question of the migration of whales. While some naturalists are of opinion that the cetaceans, flying from the pursuit of man, abandon their old haunts for more sequestered regions, others, like M. Jacquinot, believe that if the whaler is continually obliged to look for more productive seas, it is not because the whale has migrated, but because he has been nearly extirpated in one place, and left unmolested in another.

The Greenland whale fishery was, for more than a hundred years, confined to the seas between Spitzbergen and Greenland; the entrance and east shore of Davis's Straits, not being frequented before the beginning of the last century. Since then the expeditions of Ross and Parry have made the whalers acquainted with a number of admirable stations on the farther side of Davis's Straits, and in the higher latitudes of Baffin's Bay. The vessels destined for that quarter sail usually in March, though some delay their departure till the middle, or even the end of April. They proceed first to the northern parts of the coast of Labrador, or to the mouth of Cumberland Strait, carrying on what is called the south-west fishery. After remaining there till about the beginning of May, they cross to the eastern shore of the strait, and pass upwards along the coast, particularly in South-east Bay, North-east Bay, Kingston Bay, or Horn Sound.

About the month of July they usually cross Baffin's Bay to Lancaster Sound, which they sometimes enter, and occasionally even ascend Barrow's Strait, twenty or thirty miles. In returning, they pass down the western shore, where their favorite stations are Pond's Bay, Agnes's Monument, Home Bay, and Cape Searle, and sometimes persevere till late in October. The casualties are generally very great, the middle of Baffin's Bay being filled with a compact and continuous barrier, through which, till a very advanced period of the season, it is impossible for the navigator to penetrate. Between this central body and that attached to the land, there intervenes a narrow and precarious passage, where many a vessel has been crushed or

pressed out of the water, and laid upon the ice. In 1819 ten ships were lost out of sixty-three, and in 1821 eleven out of seventy-nine. Fortunately the loss of lives is seldom to be deplored, as the weather is generally calm, and the crew has time enough to escape in another vessel.

Whale fishing is not only a very dangerous pursuit, it is also extremely precarious and uncertain in its results. Sometimes a complete cargo of oil and whalebone is captured in a short time, but it also happens that after a long cruise not a single whale is caught—a result equally unfortunate for the ship-owner and the crew, who look to a share of the profits for their pay.

How much the whale trade depends upon chance is shown by the following facts. In the year 1718 the Dutch Greenland fleet, consisting of one hundred and eight ships, captured twelve hundred and ninety-one whales worth, at least, three million of dollars, while in the year 1710, one hundred and thirty-seven ships took no more than sixty-two. Various meteorological circumstances—the prevalence of particular winds, the character of the summer, or preceding winter—are probably the causes of the extraordinary failure and success of the business in different years. The Pacific is as fallacious as the arctic seas. Thus Dumont d'Urvil met in the Bay of Taleahuano with several whalers, one of whom had rapidly filled half his ship, while the others had cruised more than a year without having harpooned a single whale. In such cases the captains have the greatest trouble in preventing their men from deserting; who, being disappointed in their hopes, naturally enough look out for a better chance elsewhere.

"The method of whale-catching has been so often and so minutely described, that it is doubtless familiar to the reader. As soon as a whale is in sight, boats are got out with all speed, and row or sail as silently and quietly as possible towards the monster. One of the crew—a man of unflinching eye and nervous arm—stands upright, harpoon in hand, ready to hurl the murderous spear into the animal's side as soon as the proper moment shall have come. When struck, the whale dives down perpendicularly, with fearful velocity, or goes off horizontally with lightning speed, at a short distance from the surface, dragging after him the line to which the barbed instrument of his agony is fixed. But soon the necessity of respiration forces him to rise again above the waters, when a second harpoon, followed by a third or fourth at every reappearance, plunges into his flank. Maddened with pain and terror, he lashes the crimsoned waters into foam, but all his efforts to cast off the darts that lacerate his flesh are vain. His movements become more and more languid and slow, his gasping and snorting more and more oppressed, a few convulsive heavings agitate the mighty mass, and then it floats inert and lifeless on the waters. As soon as death is certain—for to the last moment a convulsive blow of the mighty tail might dash the over-hasty boat

to pieces—the whale is lashed by chains to the vessel's side, stripped of his valuable fat, and then left to float, a worthless carcass, on the heaving ocean.

And now, man having taken his share, there begins a magnificent feast for birds and fishes. Crowds of fulmars, snowbirds or kittiwakes, flock together from all sides to enjoy the delicious repast; but their delight is but too often disturbed by their terrible rival, the blue gull (*Larus glaucus*), which, while it rivals them in rapacity, surpasses them all in strength, and forces them to disgorge the daintiest morsels. Meanwhile sharks, saw-fishes, and whatever else possesses sharp teeth, and boldness enough to mix among such formidable company, are busy biting, hacking, scooping, and cutting below the water-line, so that in a short time, notwithstanding its vast bulk, the carrion disappears.

The catching of the whale does not always end so fortunately as has just been described. Sometimes the line becomes entangled, and drags the boat into the abyss; or the tail of the animal, sweeping rapidly through the air, either descends upon the shallop, cutting it down to the water's edge, or encounters in its course some of the crew standing up (such as the headsman or harpooner), who are carried away and destroyed. Thus Mr. Young, chief mate of the "Tuscan," was seen flying through the air at a considerable height, and to the distance of nearly forty yards from the boat, ere he fell into the water, where he remained floating motionless on the surface for a few moments, and then sank and was seen no more.

Sometimes, particularly among the sperm whales, desperate characters are found, that, without waiting for the attack, rush furiously against the boats sent out against them, and seem to love fighting for its own sake. Bennett describes an encounter of this kind which he witnessed in the South Sea. "The first effort of the whale was to rush against the boat with his head. Having been baffled by the crew steering clear, he next attempted to crush it with his jaws; failing again, through the unaccommodating position of his mouth, he remedied this defect with much sagacity; for, approaching impetuously from a distance of forty yards, he turned upon his back, raising his lower jaw to grasp the boat from above. A lance wound, however, applied in time, caused him to close his mouth; but continuing to advance, he struck the boat with such force that he nearly overturned it, and concluded by again turning on his back and thrusting his lower jaw through the planks. Fortunately the other boats came up to the rescue, and an addition of many tons of sperm to the ship's cargo made up for the damaged boat."

The cetaceans are separated into seventeen genera, which comprise about thirty species. When quite a youth we had many opportunities of observing several of them in their native haunts, and often assisted in their capture.

We proceed, therefore, to give a rapid sketch of the different members of the family as we have seen them, making use also of the abundant materials supplied by those observers who have spent half a lifetime or more in their pursuit.

Genus *BALENA*.—The Typical Whales. This genus is represented by two species, commonly called *smooth-backs*, on account of the absence of the dorsal fin.

B. Mysticetus.—The Greenland Whale. Many of the specific characters of this species we have already noticed in our general remarks upon the whale, and will here only add that this interesting inhabitant of the deep attains a size varying from fifty to seventy feet in length, and from thirty to forty in circumference at its thickest part, which is a little behind the fins. The throat is straight, and not more than an inch and a half in width. Its color is velvet-black, gray, and white, with a yellowish tinge. The white and gray increase with the age of the animal. The great quantity of oil which fills the cells of the blubber-skin, and also the extremely porous bones render the body specifically lighter than the water, and consequently it lies on the surface of the sea without any effort or motion; but for the same reason, some exertion is requisite when it desires to descend; yet it dives with remarkable velocity, sometimes to the depth of a mile. When it is disturbed or frightened, it elevates its enormous head as if to make an inspection of the cause of its alarm, then plunges it under water, at the same time raising up its back like the segment of a sphere, and, gradually rounding it away towards the extremities, shakes its mighty tail in the air for a moment, as if in defiance of its pursuers, and thus vanishes beneath the wave. In the operation of blowing they make a loud noise, which may be heard at a considerable distance. The vapor they discharge is thrown to the height of several yards, and in its circling descent resembles a wreath of smoke.

This whale is never found far from certain extensive spaces of peculiar green water, which form, according to Seorseby, one fourth part of the Greenland sea, between the parallels of 74° and 80° , equal to about twenty thousand square miles. This dark-green color is produced by an infinite number of animaleules, most of them of the *medusa* family, which minute creatures constitute nearly the sole food of this huge monster, and fill its immense carcass with tons of oil.

The period of gestation is about ten months. The young one at the time of its birth is ten or twelve feet long, and is nursed by the mother on the surface of the water, the dam turning over on the side for this purpose. This maternal support and protection continue until the mouth of the cub is furnished with that peculiar furniture for procuring its food which we have

heretofore described. At the age of twenty or twenty-five years, the animal attains its full growth. Although the exact limit of its life is not known, it is supposed to live to a very great age.

We have several times witnessed exhibitions of the affectionate disposition of these creatures towards each other, and especially to their young. Their sensibility is extraordinary; and when we consider their capability of feeling the sorrows and pangs of bereavement as strongly as human beings can experience them, we may well doubt the justice of that relentless and mercenary persecution which carries destruction into their harmless world, outraging affections so strong and deep as to be almost impressed with the characters of immortality. In regard to the maternal instinct of this whale, Mr. Scorseby remarks, that one of his harpooners struck a sucker, with the hope thereby to capture the mother. Presently she arose by the "fast-boat," and, seizing the young one, dragged about six hundred feet of line out of the boat with remarkable force and velocity. Again she rose to the surface, darted furiously to and fro, frequently stopped short, or suddenly changed her direction, and gave every possible intimation of extreme agony. For a length of time she continued thus to act, though closely pursued by the boats, and, inspired with courage and resolution by her concern for her cub, seemed regardless of the dangers which surrounded her; and finally lost her life in attempting to rescue her young one from destruction. "There is something extremely painful," says this interesting writer, "in the destruction of a whale, when thus evincing a degree of affectionate regard for its offspring which would do honor to the superior intelligence of human beings; but the great value of the prize extinguishes all feelings of compassion, and stifles every emotion of pity."

An experienced "whaleman" has given the following directions as a preliminary preparation for the successful prosecution of the business:—

"The first object is to fit out a ship adapted for the trade, and constructed, therefore, in such a manner as to possess a peculiar degree of strength. Its exposed parts, accordingly, are secured with double or treble timbers, whilst it is fortified internally with ice-beams and cross-bars, and externally with iron plates, &c., so disposed as to make the pressure on any one part to be supported by the whole fabric. A ship of about three hundred and fifty tons is deemed the most eligible, with a crew of about fifty men; six or seven very light and swift boats are required for the immediate pursuit; and one of the essential requisites is the crow's nest, or hurricane house, invented by the elder Scorseby, a species of watch-tower, made of hoops and canvass, placed on the main-topmast, for the use of the master or officer on watch, to shelter him from the blast, where he may be called to sit for hours at the

temperature of zero, and whence he can discover all the movements of the surrounding ice or whales, and give directions accordingly."

As soon as they reach the haunts of the whale, the crew must be every moment on the alert, keeping watch day and night. The boats hanging over the ship's side are ready to be launched in an instant, and when the state of the sea admits, one of them is usually manned and afloat. The officer in the crow's nest surveys the waters to a great distance, and the instant he perceives a whale he gives notice to the watch on deck, some of whom start instantly with the first boat, which is immediately followed by a second. Each of the boats has a harpooner and other subordinate officers, and is provided with an immense quantity of rope, carefully coiled and stowed in different places in the boat, the different parts being spliced together, so as to form a continued line, usually exceeding four thousand feet in length. To the end is attached the harpoon. The boat is now rowed towards the whale with the greatest possible speed, in the deepest silence, cautiously avoiding giving alarm; sometimes a circuitous route is adopted, in order to approach it from behind. Having reached within a few yards, the harpooner darts his instrument into the giant, who, in the surprise and agony of the moment, makes a convulsive effort to escape. This is the moment of danger; for the boat is exposed to the most violent blows of the whale's head or fins, and still more of its tail, which sometimes sweeps the air with such tremendous fury that both boat and men are exposed to a common destruction.

The first and usual effort of the wounded animal is to escape from the boat by sinking under water, plunging with rapid flight under some neighboring mountain of ice, or into the deep abyss. When fleeing from his pursuers, at the rate of eight or ten miles an hour, the greatest care must be used that the line to which the harpoon is attached may run off readily along with him. Should it be entangled for a moment, the whale would draw the boat beneath the waves. Sometimes, however, to retard its motion, it is usual for the harpooner to cast one or more turns of the line round a kind of post, called the *bollard*, which is fixed near the stern of the boat for the purpose; and such is the friction of the line when running round the bollard, that it frequently envelopes the harpooner in smoke; and if the wood were not frequently wetted, it would set fire to the boat. Notwithstanding this manœuvre, the line is often run out in eight or ten minutes; its end is then attached to the lines of the next boat, and even those of a third are sometimes put into requisition. When the crew of a boat see there is a prospect of their own store being exhausted, they hold up one, two, three, or more oars, according to the urgency of the required aid; for if none arrives, there is only one resource left, which is to cut the line, and thus lose it, whale and all.

The period during which a wounded whale remains under water varies,

but, at an average, may be stated at half an hour. It is sometimes an hour, and more rarely longer still; and it has been asserted, on good authority, that a case has occurred of a wounded whale being dragged up alive after having been an hour and a half continually under water—a singular fact, certainly, in the history of warm-blooded animals. When it remains long under water, it becomes asphyxiated or nearly drowned, and in all instances is greatly exhausted for want of fresh air, and by means of the enormous pressure, equal, according to Mr. Seorseby, to upwards of two hundred thousand tons, which exceeds the weight of sixty of the largest ships of war, when manned, provisioned, and fitted for a six months' cruise.

When the whale is under water, the assisting boats take up those positions near to which they calculate he is most likely to rise, in order that one of them at least may be within a start, as it is called; that is, within two hundred yards of his place of reappearing, at which distance they can easily reach him before he is prepared to descend again. On its rising, they hasten to the spot, and as they reach it, each harpooner plunges his weapon into its back, to the amount of three, four, or more, according to the size of the whale and the nature of the situation. Most frequently, however, the animal descends a few minutes after receiving the second harpoon, and obliges the other boats to await its return to the surface before any further attack can be made. After this it is actively plied with long and sharp lances, which are thrust into its body, and aimed deep into its vitals. At length, when exhausted with numerous wounds and the loss of blood, which flows in copious streams, it indicates the approach of dissolution by discharging blood from the spiracles, along with the air and mucus, and finally jets of blood alone appear. The sea to a great extent is dyed with the blood, and the ice, boats, and men, are sometimes drenched with it. Its track is likewise marked by a broad pellicle of oil, which exudes from its wounds, and appears on the surface of the sea. The final capture is sometimes preceded by a convulsive and awful struggle, and in dying it turns over on its side or back; which joyful circumstance is announced by loud huzzas. No time is lost ere the tail is pierced and fastened with ropes to the boats, which drag the carcass to the ship amidst shouts of triumph.

After a whale has been caught and secured at the sides of the ship, the next operation is that of "flensing," or securing the blubber and whalebone. This disagreeable process can, with the whole strength of the crew, be effected in about four hours. The huge carcass is somewhat extended by strong tackles placed at the snout and tail. A band of blubber, two or three feet in width, encircling the body at what is the neck in other animals, is called the "kent," because by means of it the whale is turned over, or "kented." To this band is fixed the lower extremity of a combination of powerful blocks,

called the "kent purchase," by means of which the whole circumference of the animal is, section by section, brought to the surface. The harpooners then, having spikes on their feet to prevent their falling from the carcass, begin with a kind of spade, and with huge knives, to make long parallel cuts from end to end, which are divided by cross-cuts into pieces of about half a ton. These are conveyed on deck, and, being reduced into smaller portions, are stowed in the hold. Finally, being by other operations still further divided, it is put into casks, which is called "making-off," and packed down completely by a suitable instrument.

When this flensing is proceeding, and when it reaches the lips, which contain much oil, the baleen, or whalebone, is exposed. This is detached by means of "bone handspikes," "bone knives," and "bone spades." The whole whalebone is hoisted on deck in one mass, where it is split by "bone-wedges" into junks, containing five or ten blades each, and stowed away. When the whole of the whalebone and blubber are thus procured, the two jaw-bones, from the quantity of oil which they contain, are usually hoisted on deck; and then only the "kreng" remains—the huge carcass of flesh and bone, which is abandoned either to sink, or to be devoured by birds, and sharks, and bears, which duly attend on such occasions for their share of the prey.

It will be readily believed that none of the proceedings which we have now been considering are free from numerous perils. In a high sea the flensing itself is often difficult or impossible, and those upon the body of the animal are exposed to considerable risk. Sometimes they fall into the whale's mouth, at the imminent hazard of being drowned. In the case of a heavy swell, they are drenched, and often washed over by the surge. Occasionally they have their ropes broken, and are wounded by each other's knives. Mr. Seorseby mentions an instance of a man, who, after the flensing was completed, happened to have his foot attached by a hook to the carcass when it was inadvertently let go. He caught hold of the gunwale of the boat, but the whole immense mass was now suspended by his body, occasioning the most excruciating torture, and even exposing it to the risk of being torn asunder; when his companions contrived afresh to hook the carcass with a grapnel, and brought it back to the surface.

In the account which we have presented of the capture of the Greenland whale, all circumstances are supposed to be favorable; but often it is the very reverse. A storm may arise, and a fog often envelops the whole operation; immense islands or floes, i. e., masses of field-ice, may be impelled upon them by the tempest, and with such velocity as to overwhelm them in a moment; or a frost may make them fast in its hard and icy grasp. It is such incidents as these which make this employment one of the most trying and hazardous that can be pursued; while they occasionally lead to the most

extraordinary adventures ; as examples of which we subjoin a very few narratives of facts, mostly taken from Mr. Seorseby's Journal.

"The whale itself, though, for the most part, undesignedly, is the cause of the greatest number of accidents which occur. Injuries are often sustained by entanglement of the lines. A sailor belonging to an English ship, happening to slip into a coil of running rope, had his foot entirely cut off, and was obliged to have the lower part of the leg amputated. A harpooner, belonging to another, the *Hamilton*, when engaged in lancing a whale, incautiously cast a little line under his foot. The pain of the lance induced the whale to dart suddenly downwards ; his line began to run out from under his feet, and, in an instant, caught him by a turn round the body. He had just time to call out, 'Clear away the line !' when he was almost cut asunder, dragged overboard, and never seen afterwards. Two boats, belonging to the *Baffin*, of Liverpool, having been many hours from the ship, and occasioned much anxiety, were at last descried pulling towards it. On their approach, we were a little surprised by some unusual appearances, particularly the want of their proper complement of oars, and the solemn countenances of the rowers. As soon as they were within hail, I inquired what had happened. 'A bad misfortune, indeed,' was the answer ; 'we have lost Carr !' — the principal officer of the boat. The particulars were as follows : The two boats which had been so long absent had, in the outset, separated from their companions, and, allured by the chase of a whale, they proceeded till they were far out of sight of the ship. The whale led them amidst a great shoal ; one rose so near the boat of which Carr was harpooner, that he ventured to pull towards it, though it was meeting him, and offered but an indifferent prospect of success ; he, however, succeeded in harpooning it. The boat and whale passing each other with great rapidity after the stroke, the line was jerked out of its place, and, instead of 'running' over the stern, was thrown over the gunwale : its pressure in this unfavorable position so careened the boat, that the side sank under water, and began to fill. In this emergency, the harpooner, who was a very fine, active fellow, seized the line, and attempted to relieve the boat by restoring it to its place ; but a turn of the line flew over his arm, in an instant dragged him overboard, and plunged him under water, to rise no more ! So sudden was the accident, that only one man, who had his eye upon him at the moment, was aware of what had happened ; so that when the boat righted, which it immediately did, though half full of water, they all at once, on looking around at an exclamation from the man who had seen him launched overboard, inquired what had got Carr. It is scarcely possible to imagine a death more awfully sudden or unexpected. The accident was, indeed, so instantaneous, that he had no time for the least exclamation ; and the person who wit-

nessed his extraordinary removal observed, that it was so exceedingly quick, that although his eye was upon him at the instant, he could scarcely distinguish the object as it disappeared."

Perilous, however, as this business is, unflinching courage, self-possession, and presence of mind will often carry the whaleman safely through the most appalling of these accidents. The late Mr. Charles Galacar, formerly of Provincetown, Mass., related to us an instance in point, where he was personally concerned, which we introduce here, with the belief that it may induce others to take the same precautions, and exercise a similar amount of courage. "I was in a boat of one of the vessels of the New Bedford fleet, in the North Pacific, when an event occurred which I shall never forget to the end of my life. A whale was struck, and, as usual, plunged into the abyss, dragging out the line with great velocity, when in some manner my foot became entangled in the coil, and in an instant I was hurled into the sea. Downward into the dark and foaming gulf I was drawn, with the speed of lightning, but never, for a moment, yielded to an emotion of fear. In this terrible crisis, '*de profundis clamavi*,' and experienced one of those mental illuminations which are not infrequent with persons in the presence of death. I seemed all mind. All the past of my life, with all its acts and experiences, was present in my thoughts, and during the few seconds I remained under water, long and eventful years rolled through my memory. Meanwhile the pressure on my nostrils and ears was tremendous, and attended with terrible agony. I usually wore a leathern belt around my waist, and at this time had stuck in it a sharp knife, known among fishermen as a *splitting-knife*. The moment I found myself in the water, I seized the instrument in which was centred my only hope of escape, and, fortunately, succeeded in severing the line, on which I ascended to the surface with a velocity and force which threw half my body out of the sea, bleeding at the nose, mouth, and ears, and, on being picked up by the boat, was in such a state of exhaustion that some days of rest were required to restore my accustomed strength and energy."

B. Australis.—The Whale of the Southern Seas. Many families and species of animals appear to have their habitat fixed by nature, beyond the limits of which they never pass, unless driven by some accident, such as a furious tempest, into unknown waters. Thus the Greenland whale is never found in European seas, or far from the boundaries of the green water in which it finds its food, and the whale of the south appears never to migrate farther towards the north than the coasts of Brazil and Chili.

The *B. Australis* is much smaller than the *Mysticetus*, measuring usually from thirty-five to fifty feet in length. The head is often encrusted with barnacles, which give it a white color, although the uniform color, when this

covering is removed, is black. The pectoral fins are larger and more pointed, and the lobes of the tail are less marked, than in the former species. These whales frequent the bays off Terra del Fuego, the western coast of South America, and the coasts of New Holland and Africa. The females visit the Cape of Good Hope in June, for the purpose of bringing forth their young. It is not so valuable in commerce, and consequently is not so much hunted, as its great northern congener.

Genus RORQUALUS. The generic characters of this genus are, absence of teeth, short baleen, a dorsal fin, and folds under the chin, which appendage suggested the name, *Rorqualus*, a Norwegian word, signifying a whale with folds. These folds are capable of inflation, and for a long time perplexed naturalists, who designated them "swimming bladders." They appear, however, to be simply an apparatus for enlarging the capacity of the mouth.

R. Borealis. — The Great Northern Rorqual. This animal is the largest and mightiest of all known created beings, often showing a length of one hundred and ten feet. The rorqual does not have that peculiar structure in the upper jaw for procuring food which is possessed by the Greenland whale, but the lower jaw is amply furnished for this purpose. When it opens its immense mouth, the inrushing waters open these folds, and so a prodigious net is formed, in which its prey is taken; then closing the mouth and contracting the folds, the water is expelled, whilst the vast baleen strainer retains the mollusks and fish on which it feeds. Its power of blowing is very great, and in calm weather the sound may be heard at the distance of many miles. The blubber is about six or eight inches thick, and does not yield a great quantity of oil, sometimes none at all; consequently its products are less valuable than those of other species.

This whale, as if conscious of its strength, is a fearless animal, never attempting to outstrip the pursuing boats in the race, but merely endeavors to avoid them by diving and changing its direction. It manifests not only the same strong affection and attachment as the other species noticed, but appears to exhibit an extraordinary conjugal regard. Lacépède remarks, that "the male and female seem united by the strongest bonds of affection. Duhamel reports that two were taken in 1723, which were swimming along together. The one which remained free manifested much uneasiness when its companion was wounded, and swam to the boat, and with one stroke of its tail killed three of the men, and hurled them into the sea. The two remained to the last in close company with each other, and when the one was killed the other uttered lamentable and terrible cries."

R. Minor. — The Lesser Rorqual. This species, which rarely exceeds twenty-five feet in length, although possessing many of the characters of the

last, differs from it in several important particulars, one of which — the structure of the vertebral column — is sufficient to establish a distinct species. The great rorqual has sixty-three vertebrae, while *R. minor* has but forty-eight.

These whales frequent the rocky bays of Greenland, especially during summer, and also the coasts of Iceland and Norway. They feed on the arctic salmon and other fish. Active and powerful, the natives never venture to harpoon them, but wound them with darts and spears, and, after the lapse of some days, examine the shores, hoping to find them stranded and dead. The flesh is esteemed a great delicacy, and the oil is much valued by the Icelanders.

R. Australis. — Rorqual of the Southern Seas. According to M. Delalande, the most marked peculiarity of this whale is a long dorsal fin, which, instead of being placed opposite to the vent, is situated immediately over the pectorals. The body is black above, and pure white beneath, except within the folds, which are of a rosy hue. Its power and velocity are so great, that its capture is extremely difficult and dangerous; and, consequently, it is left unmolested, pursuing its prey in peace, and sporting on the waves, fearing no disturbance on the part of human assailants. Dr. Foster thus describes the playful habits of the species: "When between Statten Island and Terra del Fuego, Lieutenant Pickersgill was sent into Success Bay, and on this occasion it was remarked that no less than thirty large whales played about them in the water. Whenever they were seen *blowing* to windward, the whale ship was infected with a most detestable rank and poisonous stench, which went off in the space of two or three minutes. Sometimes these huge animals lay on their backs, and with their long pectoral fins beat the surface of the sea, which always caused a great noise, equal to the explosion of a swivel. This kind of play has doubtless given rise to the mariner's story of a fight between the thresher and the whale; the former of which is said to leap out of the water in order to fall heavily upon the latter. Here we had an opportunity of observing the same exercise many times repeated, and discovered that all the belly, and the under part of the fins and tail, are of a white color, whereas the rest is black. As we happened to be only sixty yards from one of these animals, we perceived a number of longitudinal furrows on its belly. Besides flapping with their fins in the water, these unwieldy creatures, of forty feet in length, sometimes fairly leaped into the air, and dropped down again with a heavy fall."

These whales have the habit of placing themselves in a perpendicular position, with the head only above the water, when they present a most extraordinary appearance, resembling large black rocks in the midst of the ocean. This posture appears to be assumed for the purpose of surveying more easily the surrounding expanse, and whatever may be floating thereon.

Genus CACHALOT. A great head, with teeth in the lower jaw, and rudimentary teeth above, and a single spiracle, are the general characters of this group. Although there are undoubtedly several species of this remarkable animal, only one has been positively determined and described.

C. Macrocephalus. — The Spermaceti Whale. This is one of the largest and most powerful of the cetacean family. It is from seventy to eighty feet in length, the head forming about one third of the whole body. The pectorals are small and obtuse, and far down the back is a small dorsal protuberance, sometimes two or three smaller ones. The tail is very large, and of prodigious strength. The color above is blackish and somewhat greenish-gray; below it is whitish, and also round the eyes. In the upper part of the head is an immense cavity, divided into cells, filled with oil, which, when the animal is alive, is in a fluid state; but when the whale is dead, it becomes nearly as hard as beef tallow, and is the article with which all are familiar under the name of *spermaceti*. Ambergris is found in the intestines and rectum, and is supposed to be the hardened feces of old males — a most singular circumstance, truly, when it is considered that the article is used almost entirely as a perfume among civilized nations. The blubber on the breast is about fourteen inches thick, and on most other parts of the body from eight to eleven. It is of a yellowish color, and, when melted down, yields the sperm oil. The throat, which, in the Greenland whale, will scarcely permit the entrance of two fingers, is, in this species, capacious enough to give passage to the body of a man. It is, after the great rorqual, the swiftest swimmer of the tribe, sweeping along at the rate of ten or twelve miles an hour; but ordinarily it moves at the rate of about three or four miles.

The food of the sperm whale is a molluscous animal, called *squid* by the sailors, and, when near shore, a fish of the size of a moderate salmon, which abounds in the bays and creeks. Its mode of securing its prey is curious. When it desires to feed, it descends to a certain depth, and, remaining as quiet as possible, opens its enormous mouth, allowing the lower jaw to hang down perpendicularly. The internal parts and the teeth, being of a white, glistening color, attract its prey, and when a sufficient quantity is gathered within the mouth, the jaw closes, and the precious morsels are swallowed, when down goes the treacherous jaw again, and the operation is continued till the appetite of the monster is satisfied.

This species is gregarious, and the herds are of two kinds, the one consisting of females, and the other of young and not fully-grown males, which again are divided into groups, according to their ages. These herds are called "schools," and often consist of many hundreds. Several large males always accompany each herd of females, which are extremely jealous of

intruders, and fight fiercely to maintain their rights. In these terrible and frequent encounters, they inflict frightful wounds on each other, chiefly in the under jaw, which is supposed to account for the deformity in that member which is so often observed among them.

The females breed at all seasons, and the period of their gestation is about ten months. They are much smaller than the males, in the proportion, according to Beale, nearly of one to four. Like the other whales, they are greatly attached to their young, and are likewise remarkable for their strong feeling of sociability and attachment to one another; and this is carried to such an extent, that if one female of the herd be wounded, her faithful companions will remain round her till the last moment, or till they are wounded themselves.

The capture of the sperm whale, especially the large males, is extremely dangerous, as the enraged animals will sometimes turn upon their persecutors with unbounded fury, destroying everything that meets them in their course. The strongest whale-boat is then crushed like an egg-shell, and even mighty ships have been shivered by their gigantic blows, and reduced to a perfect wreck. Such was the awful fate of the American ship *Essex*. When the greater part of the crew were absent in the boats, killing whales, the few people remaining on board saw an enormous whale come up close to the ship, and when very near, it appeared to sink down for the purpose of avoiding the vessel, and, in doing so, struck its body violently against some part of the keel, which was broken off by the force of the blow and floated to the surface. The whale was then observed to rise a short distance from the ship, and to come with apparently great fury towards it, striking one of the bows such a tremendous blow as completely staved it in. The ship, of course, immediately filled, and turned over on the side, a dreadful spectacle to the poor fellows in the boats. On returning to the wreck, they found the few who had been left on board hastily congregating in the remaining boat, in which they had scarcely taken refuge when the vessel capsized. With much difficulty they obtained a scanty supply of provisions from the wreck, their only support for the long and dreary passage before them to the coast of Peru, whither they endeavored to make their way. Three only of the whole crew survived, the remainder having perished under unheard-of sufferings and privations. These three were found in a state of stupefaction, allowing their boat to drift along where the winds and waves listed.

The ship *Alexander*, Captain Dubois, of New Bedford, was destroyed, in a similar manner, off the coast of Peru; and quite recently the bark *Osceola*, Captain Malloy, of the same place, had a fierce encounter with one of these animals, but although the vessel received severe injuries, it came off victorious. But generally, as we have already remarked, the spermaceti whale is

a timid and harmless animal. Dolphins and porpoises sometimes sport among them, often leaping, in their wild glee, completely over the backs of these huge Leviathans, in which case the latter appear to be thrown into a state of extreme perplexity and fear. Experienced and intelligent whalers affirm that this species never, in the first instance, attacks a boat designedly; but if, in its efforts to escape its pursuers, it runs its head against one, it instinctively crushes it in its ponderous jaws; and here we perceive a curious fact, which reveals a considerable power of reflection in the animal. It evidently reasons on the incident, and comes to a decided conclusion, as after this the whale becomes a most formidable foe. It has learned that its most relentless enemy is himself vulnerable; and woe to the whale-boat that shall place itself in the way of one that has made this discovery. It will rush upon it in fury, and smash it with its powerful jaw, and in like manner will attack and destroy any boats that afterwards expose themselves to its wrath; and thus it is the part of prudence to avoid the creature after it has acquired this knowledge of its strength, and how it may be employed against its persecutors.

Although these whales delight in the vast deserts of the unfathomable ocean far away from land, there are certain seasons when they are found in great herds near coasts where the shores are steep and the waters are of sufficient depth, as New Guinea, New Iceland, New Britain, King's Mill Group, Byron's Island; equinoctial line from longitude 168° to 175° east; Ellis Group; off the east coast of New Zealand and the Navigator's Islands; coast of California, Chili, and Peru; the Galapagos; the Moluccas; Straits of Timor; the Mozambique Channel; off Japan and the China Seas, and the Loochoo Islands. Some of the proceedings of the cachalot, when on soundings, are extremely curious, and not easily explained. Equally curious and unaccountable is the peculiar noise they make beneath the surface—a sound resembling that produced by shaking violently a thin plate or sheet of copper. The sailors describe it as a kind of *sputtering*, which usually occurs when the animal is alarmed or excited. We are inclined to believe that these sounds are the whale's language, by which it communicates with its fellows in times of danger; but we hesitate to hazard the suggestion that this language is the means by which these animals warn each other of perils when separated by miles.

Genus *NARWHALUS*. This tribe of the whale family has no teeth, but instead two long and pointed tusks, called *horns*, springing from the intermaxillary bones, and directed forward in the axis of the body; it has no dorsal fin. The only species known is that described below, although Anderson, Laëpède, and Desmaret describe three, since ascertained to be merely creatures of the imagination.

N. Microcephalus. — The Narwhal, or Sea Unicorn. The length of this species, including the tusk, is from twenty to twenty-six feet. The pectoral fins are very small, considering the size, and in place of the dorsal fin there is an irregular fatty ridge, two inches in height, extending between two and three feet along the back. The prevailing color is blackish-gray on the back, variegated with numerous darker spots running into each other, and forming a dusky-black surface, with paler and more open spots of gray on a white ground at the sides, which spots disappear altogether on the belly. In old animals the ground is wholly white, or yellowish-white, with blackish spots.

The narwhal has no teeth, but its mouth is furnished with the two spirally-twisted tusks already mentioned. It is not often, however, that both tusks are developed, the right one remaining a mere germ, shut up in the bone. It would be difficult to find an explanation of this singular phenomenon. This tusk is probably a weapon of defence, and also a means of capturing the fish on which it feeds. Its habitat appears to be between 70° and 80° of north latitude, although it sometimes strays farther south.

From an interesting account of this creature, by the younger Seorseby, we infer that it is of a playful character and disposition. "A great many narwhals," he says, "were often sporting about us, sometimes in bands of fifteen or twenty together; in several of them each animal had a long horn; they were extremely playful, frequently elevating their horns, and crossing them with each other, as in fencing. In the sporting of these animals they emitted a very unusual sound, resembling the gurgling of water in the throat, which it probably was, as it only occurred when they reared their horns, with the front part of the head and mouth out of the water. Several of them followed the ship, and seemed to be attracted by the principle of curiosity at the sight of so unusual an object. The water being perfectly transparent, they could be seen descending to the keel, and playing about the rudder for a considerable time."

The blubber is from two to four inches in thickness, and yields about a half ton of very superior oil. The Greenlanders esteem the flesh highly. In the days of superstition the horns or tusks were believed to possess mystical and curative powers which easily overcame the most inveterate diseases. They are, indeed, at the present day, of great value as an article of commerce, the ivory being of an extreme density and hardness, and of a dazzling whiteness, which does not tarnish, and which is capable of receiving a very high polish.

Genus DIODONS. The diodons have only two teeth, both in the lower jaw. This genus comprises two species, *D. Desmaresti*, and *D. Sowerbi*. Of the habitat and habits of these animals nothing is known. The length is about sixteen feet, and the color black above, and white below.

Genus HYPERODONTES. Three enormous maxillary crests rise over the cranium, and are separated by deep furrows; the horns of the crescent-shaped spiracle are turned backwards. The generic name is a Greek word, which signifies *teeth in the palate*, and refers to the small, unequal, and hard points with which the upper jaw and palate are furnished. The length of the animal appears to vary from twenty to forty feet. The color is brownish-black, verging towards white beneath. It is a very rare variety. There is but one species known, the *Hyperoodon Honfloriensis*. Hunter's specimen was killed in the Thames, above London Bridge, probably a solitary wanderer from a distant ocean. The authors have supplied no information with regard to its habits.

Genus AODON. This genus has no baleen or teeth or rugosities on the palate. There is a distinct appearance of a neck; the forehead is prominent, and the jaw is prolonged in form of a sub-cylindrical beak in a continuous line with the head. There is but one species — *A. Dalei*, or the "Toothless Whale of Havre." The only specimen ever seen by naturalists was stranded near Havre in 1825. It was a young animal, about fifteen feet in length. The general color was gray; dark above and gradually becoming white beneath. This also was probably a wanderer from its native seas.

Genus BELUGA. The Beluga has an obtuse, conical, and rounded head, and is distinguished from the Globiceps by not having a dorsal fin; and from the Delphinapterus by not having the prolonged snout, like a flattened beak, peculiar to the latter genus.

Beluga Borealis. — The White Whale. The length of this species varies from twelve to twenty feet. The specimen at the Aquarial Gardens, in Boston, some years ago, was, we believe, about fifteen feet long. It is generally of a rich cream color, but the young are marked with brownish spots, and occasionally are somewhat of a blue or slatey color. The pectorals are large, thick, and oval. The tail is a powerful propelling instrument, and, in the operation of swimming, is bent under the body, and worked in such a manner that, according to Gieseeki, it impels the beluga forward with the velocity of an arrow.

The food of the species is cod, haddock, salmon, and other smaller fish of this description, which it hunts with ardor, and consumes with great apparent enjoyment. It is of a migratory habit, and visits the west coast of Greenland every year, about the end of November, where its arrival is hailed by the natives with great rejoicing, as it comes at a season when their provisions fall short. It is captured with harpoons and strong nets. The nets are extended across the narrow sounds between the islands, and when a shoal is thus interrupted in its course to the sea, they are attacked with lances, and great numbers are killed. The flesh is like that of beefs, of a bright-red

color; and, according to Hans Egede, is well-tasted: the fins and tail also are much relished by the Greenlanders. The oil, though not abundant, is of the finest quality. The internal membranes are used for windows and bed-curtains, and from the sinews is prepared a strong thread, which is employed in the manufacture of garments.

The higher latitudes of the arctic regions appear to be the favorite haunts of these animals. They are numerous in Hudson's Bay, Davis's Straits, and on some parts of the northern coasts of Asia and America, where they frequent the large rivers. Steller found them at Kamschatka, and at one time, if not at present, they were plentiful in the Gulf of St. Lawrence, going with the tide as high as Quebec. According to Mr. Seorseby, they avoid the ice, and seek those places where the water is clearest and smoothest. They are beautiful and harmless creatures, and are often seen sporting on the wave in herds of thirty or forty, bespangling the water with their splendid whiteness. They also follow ships and boats without fear, playing around, and observing them with the greatest curiosity.

Genus *DELPHINAPTERUS*. The *Delphinapterus* is distinguished from the dolphin by having no dorsal fin, and from the *beluga* by having in front of the head a slender beak. It belongs to the high latitudes of the southern hemisphere, where several species have been ascertained.

Delphinapterus Peromii.—The Dolphin of Peron. This species is about six feet in length, elegant in its form, and regular in all its proportions. The beak as far as the eye is of a satin and silvery whiteness, as also are the sides, the abdomen, the pectoral fins, and a part of the tail. The upper part of the back is of a deep bluish-black color, rising at the eyes, where the white appears like a cross, and extending downwards on the flanks, giving the animal the appearance of being covered with a black cloak. It has all the sportive propensities of other species, gamboling round vessels, following them, or inspecting them with apparent wonder.

Genus *GLOBICEPHALUS*. The generic name signifies *globe-headed*, and well describes the very prominent and round head of the animal. Four species are named, the first three of which, viz., *G. Russii*, *G. Leucocephalus*, and *G. Fuscus*, we shall pass over, and confine our remarks to the most interesting one of the group.

G. Deductor.—The *Deductor*, or *Caïng* Whale. The *Deductor* varies from sixteen to twenty-four feet in length. Nearly the whole body is black, smooth, and shining, like oiled silk; the breast and belly are somewhat lighter. The dorsal fin is about two feet long at its base, takes a curve backward, and is crescent-shaped at its extremity. The pectorals are from six to eight feet long, narrow and tapering at their extremities, and the tail is large, extending to about five feet. The most peculiar feature is the head,

which is short and round, with something like a pad over its mouth, giving it a very peculiar appearance. Each jaw appears to be furnished with from twenty to twenty-eight teeth, and when the mouth is shut, they lock into each other like those of a rat trap.

The favorite haunts of the deductor are in the Northern Ocean, between 56° and 66° . It sometimes, however, strays into lower latitudes, and has been seen even in the Mediterranean. The species is gregarious, often congregating in innumerable flocks, which, together with the timid and harmless nature of the animals, renders them an easy prey to those who hunt them. In all instances on record of their being discovered at sea and driven to land, the chase has been free from danger, and a few frail boats and most ineffective weapons, with shouts and noise in the water, were sufficient to drive them from their native element to their destruction. They have the peculiar instinct which induces them to follow a leader blindly, wherever he may go, that is seen in a flock of sheep. Thus Dr. Trail says, "I once was in a boat when an attempt was made to drive a shoal of them ashore; but when they had approached very near the land, the foremost turned round with a sudden leap, and the whole, following, rushed past the boat." The specific name, *Deductor*, is derived from this peculiarity.

They exhibit also, in an extraordinary degree, that capacity for maternal and mutual affection for which all the cetaceans are remarkable. Their associating in troops testifies to their sociability, and their disposition to help and assist one another in difficulties is a proof of the existence among them of a strong feeling of brotherhood. When one of them meets with an accident, or is stranded, it sets up a howling cry, and immediately others crowd to the spot as if to afford relief. It is supposed that from this circumstance is derived its popular name of Ca'ing, or Calling Whale. The food of this creature is sand-lances and other smaller fish. It is generally very fat, the blubber being about three inches thick, and yielding a large quantity of excellent and pale oil.

Genus PHOCENA. The distinguishing character of this genus is a short snout, uniformly rounded at the extremity. There are several well-determined species, which are distributed through all seas, enlivening them with their sportive evolutions, and exciting the admiration and wonder of the observer by the celerity of their movements, their sagacity, and their affectionate disposition towards each other.

P. Communis. — The Common Porpoise. There are few residents near the sea-shore who have not often witnessed herds of these interesting animals — nearly, if not quite, the smallest of the whale family — springing out of the water, leaping and skipping over the wave, turning somersets, and romping and amusing themselves in a variety of ways, especially when

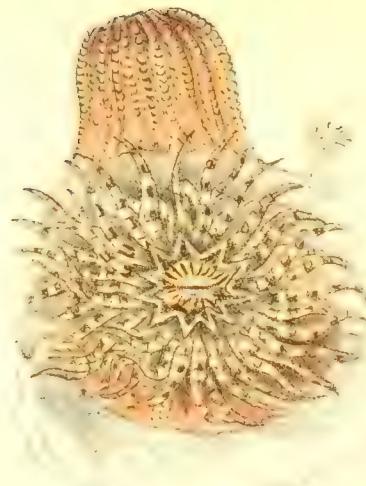
summer smiles upon the billow, and spreads her golden drapery of sunshine along the shores. The usual length of the porpoise is four or five feet, yet sometimes specimens are seen six or eight feet long. The skin is smooth and soft; on the upper part of the body, of a deep bluish-black, fading away on the sides till it acquires a silvery whiteness on the belly. The pectorals are brownish, though they rise from a white ground. The teeth are ninety-two, all equally flat and cutting. The brain is large and convex, and formed of numerous and deep convolutions lying over the cerebellum, and in this respect bears a striking resemblance to that of man. The dorsal fin and tail have no interior bony mechanism, and the former is composed almost wholly of fat.

The social disposition and gregarious habits of the porpoises lead them to form numerous societies or shoals, the individuals of which frequently swim in a line, one before another, never showing above the surface more than the upper part of the body,—except in their playful moods,—and in such a way that they appear to make a revolving motion on themselves. They do not seek the deep waters of the ocean, but seem to prefer the coasts and rivers, which they ascend in pursuit of fish, sometimes—contrary to the opinion of some naturalists—far beyond the line where the salt and fresh waters mix. A shoal of them, in October, 1868, passed up the Taunton River, as far as the city of the same name, where the water is perfectly fresh. One individual was shot, and exhibited in the market of that city for some days. Their favorite food appears to be herring, mackerel, and other similar fish, which they pursue with extraordinary swiftness, and capture with much skill. The flesh of the porpoise is dark-colored, and was once much esteemed as an article of food. We have partaken of a dish composed of the brain and other parts, and found it not unpalatable. It was common on the tables of the English gentry as recently as the time of Queen Elizabeth, and was eaten with a sauce of crumbs and vinegar; and later than this period, it was in great request in Roman Catholic countries, during the season of Lent, as, from its being an inhabitant of the sea, it was conveniently considered a *fish*. Captain Colnett relates that its flesh chopped fine, with salt pork, made excellent sausages, and was thus used by himself and crew as their ordinary food.

According to Anderson they carry their young six months. The cub at birth is about twenty inches long, and the mother watches over it with the most tender care. At the age of ten months it arrives at maturity. We have often been struck by the exceeding sensibility of these creatures, and been most painfully moved by their exhibition of distress, when captured, moaning and crying, and turning their eyes reproachfully upon their cruel assailants, as if demanding by what right they made them the object of their persecution. Could we have had our own way, they would have speedily been returned to the freedom and enjoyment of their native element.



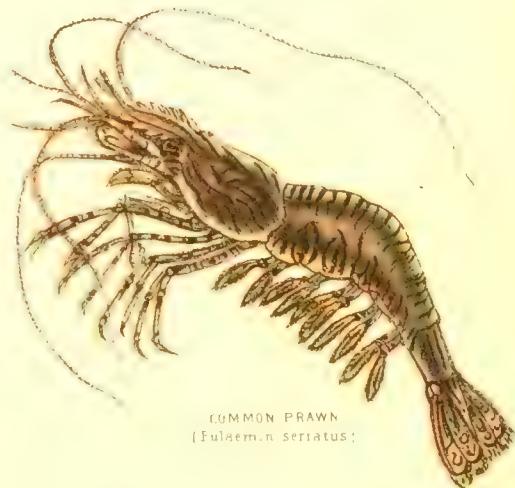
HERMIT CRAB & ANEMONE
(Pagurus Bernhardus)



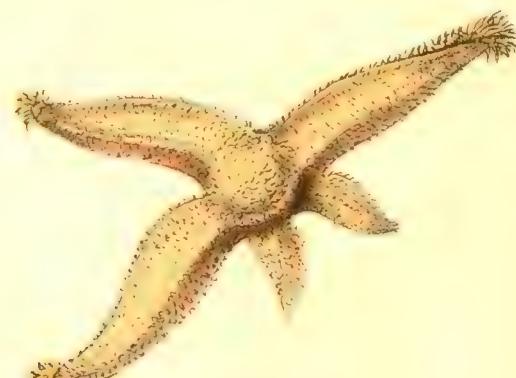
GEMMACEUS ANEMONE
(Funides Gemmacea)



STAR FISH



COMMON PRAWN
(Palaeomon serratus)



STAR FISH
(Uroaster rubens)

P. Capensis. — The Porpoise of the Cape of Good Hope. The length of this species is about four feet, and the color is almost wholly black. It is not so active as the common porpoise.

P. Grampus. — The Grampus. This is the *Grand-poisson* of the French, pronounced by the common people *Grapuâ*, whence, probably, the English appellation, Grampus. It is a large animal, often attaining the length of thirty feet. The snout is short and roundish; the teeth are forty-four, strong, large, and somewhat hooked. The dorsal fin is over four feet high; the pectorals also are very large, and it is armed with a powerful tail. The whole structure and form of the body indicate vast strength, and a remarkable capacity for rapid progression through the water. The color is black above, abruptly giving place to white on the sides, which spreads also over the abdomen.

The coasts of Greenland, Davis's Straits, and Spitzbergen appear to be the favorite regions of the grampus, although it is a frequent visitor to all seas. Like other species, it is gregarious; but occasionally individuals stray away from the herd, and, entering rivers and bays unknown to them, become bewildered, and thus, though a most daring and powerful fighter, fall a prey to the superior sagacity of man. Loudon's Magazine contains an account of the capture of one of these animals in Lynn Harbor, Great Britain, in 1829. This specimen was discovered with its dorsal fin rising out of the water. It was immediately driven into the shallows and attacked by the boatmen; but they, not being provided with proper weapons, despatched it with much difficulty, by means of great knives and sharpened oars. The groans of the poor animal are described as having been very terrible, and the effusion of blood very great.

The popular impression of the grampus is, that it is an extremely voracious and pugnacious monster. It consumes an immense number of fishes of all sizes, including cod, halibut, scate, and turbot. When pressed with hunger, it is said to leap out of the water, and dash its powerful body on porpoises and dolphins, and even larger whales, lashing them with irresistible fury, and tearing their bodies with its trenchant teeth, covering with gory foam the agitated sea, which bears the sound of the terrific combat far away. It is alleged to hunt its prey with much sagacity. It lies in wait for seals, watching them as they bask or sleep on the ice, driving them with its fins into the sea, where they become an easy prey. The grampuses are playful, too, in the midst of their rapacity, often being seen romping, and chasing each other, and amusing themselves, like the other porpoises; and when thus in company, they are said to attack even the great Greenland whale — after the great rorqual, the mightiest giant of the deep. They bite and tear its flesh, some leaping upon its back, while others wound it below, until its mighty carcass

floats, a lifeless mass, upon the blood-stained waters. On account of these reported exploits, the Americans have given to this animal the name of Thrasher, or Killer.

We have thought proper to introduce here the prevailing opinion in regard to the disposition of the grampus, and his surprising combats with the true whale, although we have reason to believe that these wonderful stories, which have been so often reiterated that they are current in all lands, are little more than romantic fictions. The same may be said of those wild legends which represent the sword-fish, saw-fish, and grampus marching in company to attack the huge mysticetus, sawing him, piercing him, and thrashing him, until he succumbs to their furious blows. The saw-fish never attacks the true whale, the sword-fish never intentionally, and it remains to be seen whether the grampus is not equally innocent of such ferocious proceedings against its great congener.

P. Griseus. This species is very rare, a stray individual, taken on the west coast of France, being the only one, so far as we know, which has ever been observed and examined by naturalists. This specimen was ten feet in length, of a bluish-black color above, and white beneath. There were no teeth in the upper jaw, and but eight in the lower. In disposition and habit it appears to resemble the deductor or ca'ing whale, associating in groups, and uttering loud cries when in danger.

P. Bivittatus.—The Striped Porpoise. This beautiful little animal is the most diminutive of the whale group, being not over two and a half feet long, and ten inches thick. The upper half of the body is of a deep, shining black color; the belly and lower jaw are white, whilst a large streak of satiny-white runs along each side. The pectoral fins are thin and white, except at the anterior edge, which is black. It belongs to the southern hemisphere, frequenting the Falkland Islands, in the vicinity of which it often sports around ships, following them even when the sea is high, springing over the billows, and apparently enjoying the resistance experienced from the agitated waves.

Genus *DELPHINUS*. A convex forehead, and a snout—in form of a beak—separated from the forehead by a marked furrow, are the distinguishing features of the genus.

D. Delphis.—The Common Dolphin. The Greeks regarded this animal with superstitious reverence, and paid it divine honors. It was sacred to the god Apollo, and figures in numerous poems and fables of antiquity. The story of the musician Arion and the dolphin is well known.

The old naturalists, too, tell marvellous tales of its exploits, and its affection and devotion to man. Pliny relates that a dolphin used to frequent the shore, near the town of Hippo, in Barbary, and accept food from any hand which would supply it. It would mix among those who were bathing, allow

them to mount upon its back, and obey them with as much celerity as precision.

He also narrates that a dolphin which had penetrated the Lake of Lucrinus, in Campania, every day received bread from the hand of a child, responding to his call, and transporting him on its back to school, at the other side of the lake. This intimacy continued for several years, when, the boy dying, the affectionate dolphin, overwhelmed with grief, soon sank under its bereavement. Other tales, equally extraordinary, are recorded, and many contain some admixture of truth, as its cerebral development would indicate a superior degree of intelligence. The weight of the brain, in relation to the whole body, is the same as that of man, viz., one to twenty-five.

The common dolphin is, usually, six or seven feet long. It is black on the back, grayish on the flanks, and white underneath. It is common to all seas, navigates the waters of the ocean in more or less numerous troops, and the vigorous springs and rapid swimming of these animals have long made them famous.

D. Pernettii.—Pernetty's Dolphin. The following is Pernetty's description of one, captured off the Cape de Verd Islands: "The anterior part of the head terminates in a hood near the root of the muzzle, and there presents something like the edge of a cloak; the back was black, and the abdomen of a pearly gray-color, verging to yellowish, dappled with spots: the teeth were sharp, and in the form of those of the pike. These creatures appeared to have come only to amuse us; they made extraordinary leaps out of the water, and many of them in their capering vaulted four feet high, and turned over two or three times in the air."

The specimen examined by Pernetty weighed about one hundred pounds; its beak was slender, and covered with a thick, grayish skin.

D. Plumbeus.—The Lead-colored Dolphin. The length of this species is about eight feet. They frequent the coasts of Malabar, where M. Dussumier observed them pursuing the shoals of pilchards. They are not so active as the ocean dolphins. They are caught sometimes in nets, but being very sagacious animals, they most frequently find means to avoid the snare. The noise of a musket makes them fly in all directions, and after having sunk under water, they take a direction different from that which their plunge would have indicated, for the purpose of deceiving their pursuers.

D. Frænatus.—The Bridled Dolphin. This dolphin is about four feet and a half long; the dorsal fin is nearly in the middle of the body. It is black on the back, lighter on the sides, and the belly is white. The head is black above; the sides are of an ash-color, and a band of a deeper shade forms a mustache on the cheek, which extends from the angle of the mouth underneath the eyes. It frequents the Cape de Verd Islands.

D. Superciliosus. This beautiful species was observed by M. Lesson, after doubling Cape Horn, in south latitude 45°. It is about the length of the former variety. All the upper parts of the body are of a brilliant blackish-blue color, and the sides and under parts shine with silvery whiteness. There is a large white streak over the eye, reaching to the front; and another mark, like a white ribbon, running along the sides of the body near the tail.

D. Lunatus.—The Funenas of the Chilians. “This small dolphin,” says Lesson, “destroyed an immense quantity of fish, and every morning, at sunrise, we noticed numerous troops of them, which unceasingly were diving, and appeared very busy in hunting their prey. At ten o’clock in the morning, when they had well breakfasted, they devoted themselves to play, and seemed delighted with their leaps, apparently striving which should rise the highest.”

The length of the species is about three feet. The beak is slender; the back is of a clear fawn-color, gradually passing into white beneath; a dark-brown and accurately defined cross is seen on the back, on a line with the pectorals, and anterior to the dorsal fin.

Genus DELPHINORHYNCHUS. This group is characterized by a prolonged snout, with a thin beak, which is not separated from the forehead by a furrow. The jaws are straight, and both are furnished with numerous sharp teeth.

Delphinorhynchus Bredanensis. A specimen of this species was stranded at Brest, and examined by M. Von Breda. It was eight feet long. The dorsal fin was elevated; its pectorals were seythe-shaped, and its tail lunate and curved in the middle. All the upper parts of the species are sooty-black, and the lower of a rich rosy hue. It probably inhabits the Atlantic Ocean, but is somewhat rare.

Genus Soosoo. The beak of the soosoo is long and slender, compressed at the sides, and expanded at the extremity, where it is somewhat curved.

S. Gangeticus.—The Soosoo of the Ganges. Cuvier remarks that this is the most extraordinary of all the beaked dolphins. The name Soosoo is given to it by the natives in Bengal. The body is rather long and slender. The head is obtuse, somewhat acuminated at the upper and anterior part, and suddenly tapering to a long, slender, but strong beak. The color is a shining pearly-gray, with here and there lighter colored spots. According to Dr. Roxburg, they are found in great numbers in the Ganges, as far up as it is navigable, but seem to delight most in the slow-moving labyrinth of rivers and creeks which intersect the delta of that river to the south and east of Calcutta. When in pursuit of the fish on which it feeds, it moves with great velocity; but at other times its motions are slower and heavy, often rising to the surface to breathe. The Hindoos employ the oil as an external remedy of great efficacy for removing pain.

Genus *INIA*. The inia has a beak like the dolphin, but cylindrical, and bristled with strong hairs.

I. Boliviensis. This singular species, which appears to form a link between the Soosoo of the Ganges, and the Stellerus, one of the herbivorous cetæ, inhabits solely rivers and fresh-water lakes, and is met with thousands of miles from the sea. It is found in all the streams which traverse the immense plains of the province of Moxos, and which go to form the rivers constituting the Madieras, one of the earliest tributaries of the Amazon; the animal ascends almost to the foot of the Eastern Cordilleras. The males are said to be about fourteen feet long, the females seven. The color varies; usually it is a pale-blue above, passing into a rose-color below; the tail and pectorals are blue. Some are all over of a rosy hue, and others are blackish. This species comes oftener to the surface to breathe than the marine varieties, and is not so active in its movements. They habitually unite in little troops of three or four individuals, and are observed to raise their snouts from the water whilst devouring their prey, which appears to consist entirely of fish. The mother exhibits all the usual affection of the order for her young, and is all devotedness to their well-being and safety.

Genus *OXYPTERUS*. A Sicilian naturalist—M. Refinesque Smaltz—first mentions this animal, which he had seen in the Mediterranean, and described as a dolphin, with two dorsal fins.

O. Rhinoceros.—Rhinoceros Whale. This animal derives its name from the circumstance that it has a fin on the head, bent backward, the same as that on the back. All the information we have in regard to this whale is contained in the following paragraph from the work of Quoy and Gaimard:

"In October, 1809, in going from the Sandwich Islands to New South Wales, many dolphins, in troops, were performing their rapid evolutions about the vessel. The size of this creature was about that of the common porpoise; the upper part of the body to the dorsal fin was spotted black and white."

Here terminates the great and interesting order of Cetaceans. Although we have referred to nearly all the genera and species described by the authors, we are quite sure that many have escaped the attention of naturalists. Intelligent navigators speak of whales, and describe them with great minuteness,—animals varying from thirty to one hundred feet in length,—which as yet have no place in history. Captain Henry J. Coop, of New Bedford, long engaged in the business of "whaling" in the northern seas, is certain of three distinct varieties, well known to sailors, but entirely unknown to science.

MARINE MONSTERS.

WE now proceed to speak of certain alleged inhabitants of the sea, whose existence and character are involved in so much obscurity and mystery that science has hitherto failed to place them in any class, family, order, genus, or established species of the animal kingdom. The genus "*Scoliophis*," invented by the Boston Linnaean Society as a designation for the great American sea serpent, is something like a picture-frame without a picture, inasmuch as the conviction is becoming stronger every day, that the family of monsters, for which it was intended, is merely the creation of an excited imagination. Our own want of faith in the existence of these marvellous animals, does not arise in any disbelief of their possibility; for, as Oppian well remarks, "*In mari multa latent;*" the sea is vast, and capable of hiding in its unknown and profound abysses tribes of monsters of huger dimensions than these. Our incredulity is based on this consideration: as these animals, like all others, are subject to the incident of death, and to the laws of decomposition, it would seem impossible that during so many ages, some remnant, a cranium, tooth, vertebral or other bone, should not be driven ashore, and in such numbers as to be certain of securing the attention of science. Yet these supposed monsters have given no such signs of existence. Not a single bone has ever found its way to any shore, so far as known. As, however, we could not pass over in entire silence this class of alleged creatures, we introduce here a brief account of them, drawn from the popular reports, and leave the reader to judge how much of truth may be interwoven with the wild tales of the old authors.

The classic nations of antiquity had their marine monsters and terrific water serpents, of which the dreadful hydra was one; and their mythology and poetry are filled with descriptions of these wonderful beings; but the imagination of ancient Greece, and Rome, and Egypt never conceived the notion of creatures so vast and weird as those described in the chronicles of the Northern European nations. The north was always a land of wonders, the home of giants, and the stupendous ash tree, Yggdrasil, whose branches reached above the clouds; and the active intellect of the people rioted in the wildest flights of fancy. The vast mountain caverns were filled with gigantic tribes, and the ocean teemed with monsters it is difficult to describe. We will commence the *natural history* of the latter with an account of the following creature, which, however, can scarcely be called a sea serpent.

THE KRAKEN. This monster is supposed to dwell on the coast of Norway, and the fishermen and mariners of those regions appear to have an

implicit belief in its existence. All Scandinavian writers have honored it with a notice, among whom we mention Olaus, Wormius, and Pontoppidion. The first two of these authors speak somewhat vaguely of the animal, and seem to regard it as a species of whale. But the most wonderful peculiarity of the kraken is its enormous size; the distance across its back, according to Pontoppidion's account, appearing to be about half a mile! But we will let the learned author speak for himself.

"Our fishermen usually affirm," says he, "that when they row out a few miles to sea, particularly in hot summer days, they are informed by various circumstances that the kraken is at the bottom of the sea. Sometimes twenty boats get together over him; and when, from well-known indications, they perceive it is rising, they get away as fast as they can. When they find themselves out of danger, they lie upon their oars, and in a few minutes they see the monster come to the surface.

"He there shows himself sufficiently, though only a small part of his body appears. Its back, which appears to be a mile and a half in circumference, looks at first like a number of small islands, surrounded with something which floats like sea-weeds; here and there a larger rising is observed, like sandy banks; at last several bright points or horns appear, which grow thicker the higher they rise, and sometimes they stand up as high and as large as the masts of middle-sized vessels. It seems these are the creature's arms, and it is said that if they were to lay hold of the largest man-of-war, they would pull it down to the bottom. After the monster has been a short time on the surface of the water, he begins slowly to sink again; and then the danger is as great as before, because the motion of the sinking causes such a swell, and such an eddy and whirlpool, that he carries everything down with it."

On the above, Mr. Robert Hamilton remarks, "It is a favorite notion of Pontoppidion, that from the appearance of the kraken originate those traditions of floating islands being so frequently observed in the North Sea. Thus Debes, in his *Feroa Reserata*, alludes to certain islands which suddenly appeared, and as suddenly vanished."

Similar accounts may be found in Harpelius and Torfaeus. These islands are looked upon by the common people as the habitation of evil spirits, but are more probably occasioned by the appearance of this great sea animal. "We ought not," says Pontoppidion, "to charge the evil spirit without a cause. I think the making and unmaking of these floating islands is nothing else but the kraken, which some seafaring people call *Soe-trolden*, i. e., sea mischief. What confirms me in this opinion is the following occurrence, quoted by the worthy Swedish physician Urban Hierne, from Baron Gripenheim: 'Among the rocks about Stockholm there is sometimes seen a

certain tract of land, which at other times disappears, and is again seen in another place. Bureus has placed this as an island in his map. The peasants say it is not always seen, and that it lies in the open sea; but I could not find it. On Sunday I saw something like three points of land in the sea, which surprised me. Upon this I went to inquire of a peasant, but on our return we could see nothing of it. Now, who is it that cannot discover that this visible and invisible island is nothing else than the kraken, improperly placed in the map by Bureus? Probably the creature keeps himself always about that spot, and often rises about the rocks and cliffs."

"At first view this account can scarcely be regarded in any other light than that of mere fable; and yet, probably without much difficulty, this extraordinary kraken may be identified with certain species of *sepia* or cuttle-fish, which have been described in the *Annals of Science*."

Mr. Pennant describes an eight-armed cuttle-fish, and says, that "in the Indian seas this species has been found of such a size as to measure twelve feet in breadth across the central part, while each arm was fifty-four feet in length, thus making it extend, from point to point, about one hundred and twenty feet. He further states that the natives of the Indian isles, when sailing in their canoes, always take care to be provided with hatchets, in order immediately to cut off the arms of such of these animals as happen to fling them over the sides of the canoe, lest they should pull it under water and sink it." The opinion of Dr. Shaw is equally decided regarding the occurrence of this animal.

"The existence of some enormously large species of the cuttle-fish tribe in the Indian northern seas can hardly be doubted; and though some accounts may have been much exaggerated, yet there is sufficient cause for believing that such species may very far surpass all that are generally observed about the coasts of European seas. A modern naturalist chooses to distinguish this tremendous species by the title of the Colossal Cuttle-fish, and seems amply disposed to believe all that has been related of its ravages. A northern navigator, of the name of Dens, is said, some years ago, to have lost three of his men in the African seas by a monster of this kind, which unexpectedly made its appearance while these men were employed, during a calm, in raking the sides of the vessel. The colossal fish seized the men in its arms, and drew them under water, in spite of every effort to preserve them; the thickness of one of the arms, which was cut off in the contest, was that of a mizzen-mast, and the suckers of the size of pot-lids."

But the most zealous author who treats of this animal is undoubtedly Denys Montfort. In his work on the Natural History of the Mollusca, there are many instances mentioned of its occurrence in various parts of the world, the particulars of which he was so fortunate as to procure from those who were

eye-witnesses of what he relates. He gives in detail the circumstances above alluded to by Dr. Shaw from the account as supplied by Dens himself; and, among other instances, he mentions that at St. Malo, in the chapel of St. Thomas, there is an ex voto, or picture deposited there by the crew of a vessel, in remembrance of their wonderful preservation during a similar attack off the coast of Angola.

The Transactions of the Royal Society of Edinburgh contain a notice of a supposed kraken which appeared off the eastern coast of Scotland more than sixty years ago. Its appearance is fortified by the affidavits of the master and mate of a Norwegian ship, made before two magistrates. They reported that it was seen Sunday, about fifteen leagues from shore, in latitude $56^{\circ} 16'$. It was less than a mile from the ship, and seemed to be about three miles long, of a grayish color, and in form resembled three low islands. It was visible for nearly an hour, but as a breeze sprang up it gradually disappeared. This must have been a mere illusion; it was probably a fog-bank, which the wild imagination of the Norwegians transformed into a sea monster.

Pontoppidan also states that he was informed that one of these creatures was stranded among the rocks, in Norland, in the year 1680, and that the carcass filled up a great part of the Narrow Channel, and, being a long time decaying, made it almost impassable by its intolerable stench.

We conclude this account of the kraken, with an extract from Blackwood's Magazine. "The different authorities we have quoted are, we trust, sufficient to establish the existence of an enormous inhabitant of the deep (the cuttle-fish), possessed of characters which, in a remarkable degree, distinguish it from every other creature with which we are familiar; and the agreement which may be observed in its descriptions, when compared with those of the celebrated kraken, is sufficiently obvious to warrant the inference which we are now prepared to draw: that the great Norwegian animal thus named is to be considered not as a wild and groundless chimera, but as either identical with or nearly allied to this colossal cuttle-fish."

"It must be confessed that many of the accounts to which we have referred, if considered singly, are much too vague and indefinite to form the foundation of any opinion; but it is the general import and tendency of the whole combined which should be considered. In this view, it would be contrary to an enlightened philosophy to reject, as spurious, the history of an animal the existence of which is rendered so probable, by evidence deduced from the prevailing belief of the different tribes of mankind, whose opinions, it is evident, could not have been influenced or affected by the tradition of each other, but must have resulted from the occasional appearances of the monster itself in different quarters of the globe."

THE SEA SERPENT OF THE NORWEGIAN COAST. We introduce the very

positive statements of some of the older and more recent writers in regard to this mysterious animal, reserving our remarks until the testimony not only concerning these, but the Scotch and American varieties, is fully presented.

Pontoppidion, in his Natural History of Norway, makes the following statement: "Our coast is the only place in Europe visited by this terrible creature. This makes many persons who are enemies to credulity entertain doubts about it. I have questioned its existence myself, till that suspicion was removed by full and sufficient evidence from creditable and experienced fishermen and sailors, of which there are hundreds who can testify they have annually seen them. All these persons agree very well in the general description. In all my inquiries, I have scarcely spoken to any intelligent person who was not able to give strong assurance of the existence of this fish; and some of our traders think it a very strange question when they are seriously asked whether there be such a creature; they think it is ridiculous, as if the question were put to them whether there be such fish as cod or cel. Captain L. de Ferry, who was in his boat, with a crew of eight men, saw this sea-serpent, which he fired at and wounded. His description very much agrees with that already given, and every particular is authenticated by the affidavits of two of his crew. We are also informed that Governor Berestrap states that he saw a similar animal a few years before, and drew a sketch of it. Mr. Hans Strom, a clergyman, also caused a sketch to be made of one which came under his inspection and other eye-witnesses are named. I might mention, to the same purpose, many more persons of equal credit and reputation." "Though it is difficult to ascertain its exact dimensions, yet all who have seen it are unanimous in affirming that it appears to be about six hundred feet long; that it lies in the water in many folds, and there appears like so many hogsheads floating in a line, at a considerable distance from each other."

The missionary Hans Egede thus records what he himself witnessed off the coast of Greenland, in the year 1734: "None of these sea monsters have been seen by us, nor by any of our time that I could hear, save that most dreadful monster which showed himself on the surface of the water off our colony, in 64° north latitude. This monster was of so huge a size, that, coming out of the water, its head reached as high as the mainmast; its body was as bulky as the ship, and three or four times as long. It had a long, pointed snout, and spouted like a whale-fish; it had great broad paws; the body seemed covered with shell-work, and the skin was very rugged and uneven. The under part of its body was shaped like an enormous huge serpent; and when it dived again under water, it plunged backward into the sea, and so raised its tail aloft, which seemed a whole ship's length distant from the bulkiest part of its body."

The most recent account of this monster, we have noticed, appeared in the public newspapers of Drontheim, in the autumn of 1837, an abridgment of which we give below: "The Adis of this city contains an account from Tozen of the end of August, which it says was communicated to the editor by a very enlightened and principled man, so that it merits attention, as tending to remove the doubt respecting the existence of the sea serpent. The account says, that since the beginning of the dog-days, the serpent has been seen at various parts of the coast of that district. One of them seems to have remained constantly during this summer near Storfosen, at the Kerg-vang Islands. Several fishermen have been so dreadfully alarmed at the sudden appearance of the serpent so near their boats, that they did not know in what direction to escape. The serpent did not attack, but followed the boat for some distance, and the men, in their haste, so over-exerted themselves, that two were confined to their beds. Very credible persons affirm that the length of the sea serpent may be taken at six hundred or eight hundred ells, or perhaps more; for when these people were near its head, they could not discern its tail. Its greatest thickness is towards its head. These observations were made very clearly within these few days, amongst others, by a credible, sensible man, who, with his two sons, was on our island, where they landed, and where the serpent, after following their boat, swam slowly by."

THE SEA SERPENT OF THE SCOTCH COAST. In the year 1809, an extraordinary animal was stranded on the Island of Stromsa, one of the Orkneys, which was supposed to belong to this class, and which excited the amazement and wonder of the inhabitants. It was much mutilated when examined, and the reports of those who observed it are quite contradictory. It was fifty-six feet in length, and twelve in circumference; had three pairs of fins or paws, a long, slender neck, and a small head. The shoulders were clothed with a kind of bristly mane, and it was furnished with spiracles, like the whales. It has been said that the skull and vertebral bones, which were preserved, prove it to have been some species of the basking shark. If this be so, the descriptions given of its external appearance and form must have been erroneous in many particulars. But not to dwell on this animal, we proceed to give an account of another, still more remarkable, reported by the Rev. Mr. Maclean, of Eigg, to Dr. Neill, the learned and worthy secretary of the Wernerian Society. "I saw the animal of which you inquire, in June, 1808, on the coast of Coll. Rowing along that coast, I observed, at about the distance of half a mile, an object to windward, which gradually excited astonishment. At first view it appeared like a small rock; but, knowing that there was no rock in that situation, I fixed my eyes closely upon it. Then I saw it elevated considerably above the level of the sea, and, after a

slow movement, distinctly perceived one of its eyes. Alarmed at the unusual appearance and magnitude of the animal, I steered so as to be at no great distance from the shore. When nearly in a line between it and the shore, the monster, directing its head, which still continued above water, towards us, plunged violently under water. Certain that he was in chase of us, we plied hard to get ashore. Just as we leaped out on a rock, and had taken a station as high as we conveniently could, we saw it coming rapidly under water towards the stern of our boat. When within a few yards of it, finding the water shallow, it raised its monstrous head above water, and, by a winding course, got, with apparent difficulty, clear of the creek where our boat lay, and where the monster seemed in danger of being embayed. It continued to move off with its head above water, and with the wind, for about half a mile, before we lost sight of it. Its head was somewhat broad, and of form somewhat oval; its neck somewhat smaller; its shoulders, if I can so term them, considerably broader, and thence it tapered towards the tail, which last it kept pretty low in the water, so that a view of it could not be taken so distinctly as I wished. It had no fins that I could perceive, and seemed to me to move progressively by undulation up and down. Its length I believed to be between seventy and eighty feet. When nearest to me, it did not raise its head wholly above water, so that the neck being under water, I could perceive no shining filaments thereon, if it had any. Its progressive motion under water I took to be very rapid. About the time I saw it, it was seen near the Isle of Canna. The crews of thirteen fishing boats, I am told, were so much terrified at its appearance, that they, in a body, fled from it to the nearest creek for safety. On the passage from Rum to Canna, the crew of one boat saw it coming towards them, with the wind, and its head high above water. One of the crew pronounced its head as large as a little boat, and its eyes as large as a plate. The men were much terrified, but the monster offered them no molestation."

THE SEA SERPENT OF NEW ENGLAND. This alleged monster, according to the various accounts, first made its appearance in the Harbor of Gloucester, Essex Co., Massachusetts, in August, 1815. It is described as having a serpent form, and capable of very rapid progression. It appeared only when the skies were bright and sea tranquil, and floated on the surface like a number of buoys following each other in a line. Many persons testified to its general appearance, but did not agree in all the particulars. We will give one of these affidavits, which furnishes as good a description of the creature as we can obtain. "On the 20th of June, 1815, my boy informed me of an unusual appearance on the surface of the sea in the Cove. When I viewed it through a glass, I was in a moment satisfied that it was some aquatic animal, with the form, motions, and appearance of which I was not

previously acquainted. It was about a quarter of a mile from the shore, and was moving with great rapidity to the southward. It appeared almost thirty feet in length. It then came towards me very rapidly, and lay entirely still on the surface of the water. Its appearance then was like a string of buoys. I saw thirty or forty of these protuberances, which were about the size of a barrel. The head appeared six or eight feet long, and tapered off to the size of a horse's head. It then appeared about one hundred and twenty feet long; the body seemed of a uniform size; the color deep-brown. I could not discover any eye, mane, gills, breathing-holes, fins, or lips."

In August, 1819, a similar monster is said to have made its appearance off Nahant, the celebrated watering-place, near Boston. This animal is described very much as the former, seen at Gloucester, with this addition: the eyes are "bright and glistening." Again, in July, 1833, it reappeared at Nahant, and was observed by a large number of ladies and gentlemen. Many communications in regard to it were published at the time, among others, one from the Hon. Lonson Nash. It will be seen that these descriptions agree, in the main, with Pontoppidan's representation of the Norwegian serpent, especially in the resemblance to a string of buoys.

From what we have already said, the reader will perceive that we have no strong faith in the existence of such a monster. The evidence, although positive, will scarcely bear a severe scrutiny; besides, the well-known credulity of the people of those regions, their proneness to believe in marvellous things, and to exaggerate and adorn the simplest facts, until they assume the most wonderful proportions and features, make it probable that some unusual appearance, like that of a shoal of porpoises, marching in single file, in a straight line, as is their habit when travelling, showing their backs above the water, like so many buoys, was transformed, in their imagination, into the terrible animal they have described, with so many serpent attributes.

ORDER VII. — PACHYDERMATA.

The pachydermes, or *thick-skinned* animals, form a remarkable group. The gigantic elephant, which delights in the luxuriant forests and shallow streams of the warm latitudes of Asia and Africa, the graceful and useful horse, which from the beginning has been the constant companion and friend of man, whose fidelity and beauty are celebrated in history, romance, and song, — the fierce rhinoceros, — the *unicorn* of the ancients, — the hippopotamus, and the valuable, but unromantic swine, are all members of this order. The huge mastodon, and all those vast wrecks of an unknown period, separated from us by thousands of ages, and whose mighty forms peopled the primeval forests when the earth was young, also belong to this family.

With the exception of the horse and hog, the animals comprised in this division can scarcely compare with the ruminantia in the utilitarian point of view; although the elephant in India is made to do good service in the transportation of heavy baggage, and other accompaniments of armies, and it is thought that the American tapir, possessing a mild and tractable disposition, might be domesticated and employed as a beast of burden.

Genus *ELEPHAS*. As the elephant is so frequently exhibited in this country, there are none who are not familiar with its general appearance and form. The numerous menageries which have become so popular during these last years, are, to a limited extent, good schools of natural history, where all classes of our citizens are cheaply furnished with the privilege of inspecting personally many rare and interesting animals, and this gigantic denizen of the tropical forests among the rest. We shall refrain, therefore, from any descriptive remarks, and merely refer the reader to our figure on Plate XVIII.

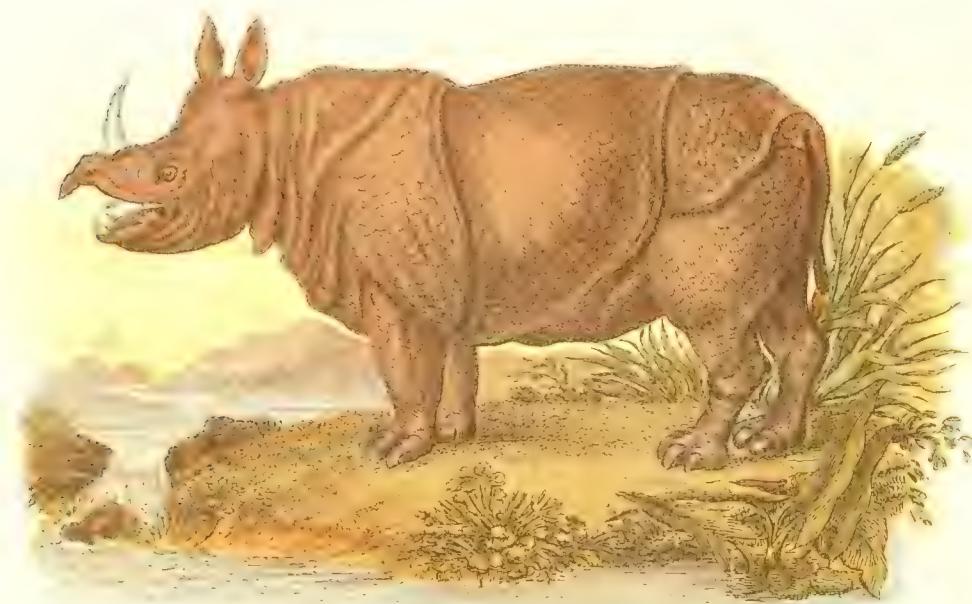
Notwithstanding the prodigious size and strength of these creatures, they appear to be of a harmless and inoffensive character, unless they are attacked by some foe, such as the lion, tiger, or man. They are of a sociable nature, form societies or troops, under a patriarchal form of government, and peacefully accomplish the purpose of their existence, in the gorgeous shades and retreats which the Oriental forests so liberally supply. The troop is governed by a hoary male elephant, who directs all the movements of the family, leading it, as the heat of the day increases, to a deeper shade, watered by cooling streams, and again, morning and evening, guiding it to the forest skirts to feed on the tender foliage which Nature furnishes in abundance for its sustenance. These animals have an excessive fondness for sweet substances, which renders them sometimes very destructive to sugar plantations. Although they are timid, and easily alarmed, and by no means aggressive, yet when attacked and wounded, "they turn upon their assailant with the utmost fury, and unless he has previously prepared a way of escape, seldom fail in wreaking their vengeance, by mangling and trampling the body long after life has become extinct."

There are two species, one belonging to Asia, and the other to Africa.

Elephas Indicus. For a general description and appearance, we again refer the reader to the plate already indicated. The ears of this species are much smaller than those of the African species, but it far surpasses the latter in size. Although very awkward and unwieldy in appearance, it is capable of quite rapid progression, often outstripping the speed of the swiftest horse. The eyes are comparatively small; the feet have five toes; the soles are divided outwardly into nearly circular deep pits, in each of which is contained a number of small, irregular polygons, which make the surface appear



The Elephant



The Rhinoceros

like a shagreened skin. The most extraordinary feature of the elephant is the prolonged nose, or proboscis, often called the *trunk*. Its prehensile power is very great, as it easily raises immense weights, while, at the same time, its sensitiveness is so delicate that it can feel and pick up particles of extreme minuteness. It serves as a hand, by which the animal conveys food and drink to its mouth, and also as a most efficient weapon of defence. Its prodigious blows stun the tiger, lay open the brain of the leopard, and appall even the lion, the king of beasts. When enraged, the elephant lashes it violently right and left, and in a circular direction around the head, and woe to the man or beast which is within the circle of its sweep. The color of the Indian elephant is brownish-gray, sometimes slightly mottled with flesh-color, and the skin, which is hard, thick, and wrinkled into folds, near the legs, on the neck and breast, is thinly set with rigid hairs of a similar tint. The tusks are too well known to need any description.

The general height of the Indian elephant is from eight to ten feet. Mr. Scott, of Stinton, mentions one male as the largest he had heard of—twelve feet two inches high from the crown of the head to the ground, and at the shoulders about ten feet five inches. The length was fifteen feet. The young animal grows very rapidly at first; by the second year it has reached a height of four feet; after this period it increases more slowly, till it has reached twenty or twenty-two years. They are suckled for two years; and, in a wild state, the young run for suck indiscriminately to any female, without regard to the mother, and thus the cry of distress from any of the young generally arouses the herd. The tusks are shed about the twelfth or thirteenth year. The cheek teeth appear about six or seven weeks after birth.

Like other animals, the elephant is subject to variations. Difference of the general color is frequently seen, and some of a reddish hue are met with; but this has been attributed to adventitious matter received upon the skin by rubbing, though, as a variety, it is still asserted by some to exist naturally. A similar kind is found in Africa. But the white elephant, occasioned by albinism, is the most valuable, held even in veneration, and always brings a most extravagant price.

The different direction of the tusks has also given rise to different names; of those the most esteemed have the tusks nearly horizontal, and by the native princes they are frequently ornamented, and bear trinkets suspended. India and the East are the countries where the elephant is most subjected to the dominion of man, and where it becomes almost a necessary animal in the business of the inhabitants, of course affording a profitable employment to the dealers in those animals, or, if one may be allowed the term, to the elephant jockeys. Various modes have been devised to capture them; and they do not appear to display the same active intelligence which they do on

many occasions in a tame state, or to be so timorous and wary as African travellers describe the animal of that country. One of the most commonly employed means of capture is driving them into a keddah, or enclosure, with a wide or extensive opening, which is gradually narrowed, and made on the same principle with the buffalo pound. The strength, however, of the last enclosure is very different. There is a broad ditch, too wide for an elephant to stride over, of a considerable depth, and around, on the outside, is a paling of large timbers, well bound with strong battens, and supported by props at suitable distances, forming an immense bulwark. When a large herd of elephants is discovered, or when two or more small herds are found so contiguous as to be easily brought together, the people of the neighboring country, who in general receive regular wages for their aid, are collected to surround them, and often assemble to the number of six or eight thousand men, with fire-arms, drums, trumpets, fire-works, and, in short, anything that can intimidate the herd. The whole body move slowly towards the funnel, in which is strewed a small quantity of those fruits and vegetables in which elephants delight, such as plantains, sugar-canæs, &c. Many days are frequently required to drive a herd, and sometimes the elephants are driven thirty or forty miles. The circle is gradually narrowed as the funnel is approached, and when fairly within, the funnel itself forms a part of the circle. They begin to taste some of their favorite foods, which being quickly consumed, some by degrees venture into the keddah itself. The example is soon followed, and but little coercion is required now to urge the whole within the paling, which is then secured with strong bars.

At one period, the manner of subjection, after the animals were thus enclosed, was by starvation, binding their legs with strong ropes, and gradually accustoming them to the individual who was afterwards to have them in charge. It has, however, been found to be much more advantageous to entice them by kindness; by this treatment they are sooner subjected, and are not liable to be rendered useless from the cutting wounds inflicted by the ropes with which they were bound, and which, in a warm climate, ulcerated to an immense extent, and often proved fatal. When one is in a proper state to be removed, tame males, or decoy females, are used, which lead him to the place where he is to be picketed. Here the mahout, or keeper, redoubles his care and caresses, and seldom fails to become a favorite, and often an object of great attachment to the animal.

The most singular method, however, which has been adopted for taking elephants, is by the assistance of decoy females, which enter into the undertaking as if they were as much interested in it as their owners. This is chiefly practised with those males which have been driven off from the herd, and are wandering about by themselves. They are known by the title of

sauns, and are valuable to dealers, being the second in size and strength to the leader of the herd. Two decoy elephants, or koomkies, as they are termed, are generally employed in this business, attended by the mahout, provided with a black covering and strong ropes. When the wild animal is discovered, the decoys approach as near as possible, the mahout mounted, covered with his cloak, and crouching. When afraid of discovery, he slides down, and the females proceed alone on their treacherous errand, in which they generally succeed so well by caresses, as to distract the attention of the animal, and thus enable the men to bind his legs. Sometimes, during the caresses, he is led towards a tree, and his bonds made fast to it. The clasps for the hind legs are made with a joint in the middle, and studded in the inside with short nails, which inflict much pain when the animal begins to struggle, and ultimately oblige him to desist. In case of the men being discovered during the operation of binding, the tame elephants will attack and restrain the wild animal until they escape; and instances even are told of their having suffered death in defence of their keeper. If the binding is successful, the animal is left to himself during the first day, and on discovering his position vents his anger and disappointment in struggles and incessant roaring, refusing all sustenance or kindness. Thirst and exhaustion, however, begin to tame him, and he gradually receives water, and the same tame animals which captured him, with their keepers, by degrees win upon him by pampering his appetite, and doing him various acts of kindness. Before being liberated, large ropes are fastened around his body. When still troublesome, — and they sometimes make furious attempts to escape, — the leading elephant proceeds as quickly as possible, while others goad him behind, and the mahouts spur them on.

From the earliest periods the elephant has been subjected to the domination of man, by whom it has been employed as a beast of burden, but more especially as a powerful auxiliary in war. When King Pyrrhus invaded the territory of the Roman commonwealth, he was accompanied by a large number of these animals, and owed his first victories to the terror which they inspired among the Roman soldiers, who were at that time unacquainted with them.

The elephant unquestionably belongs to the most intellectual class of animals, and is capable of considerable education. Endowed with a strong memory, it scarcely ever forgets the instructions it has once received, and is, consequently, able to perform not only a great many amusing tricks, but numerous useful labors. It is grateful, kind, and affectionate towards those from whom it receives benevolent treatment, but remembers and avenges terribly any wrong which may be inflicted upon it.

E. Africanus. The African elephant is somewhat smaller than the

Asiatic, but the ears are much larger, being of enormous size, covering the entire shoulders, and reaching downward upon the legs. The species inhabits the whole continent from the Niger to the Cape of Good Hope, assembling in large herds in the cool mimosa groves, where water is abundant—an element so essential to their peculiar organization, which requires the refreshment of frequent ablutions. They are vigilant, defend their young to the last extremity, and are fierce and revengeful when wounded or attacked. They are not domesticated, nor employed in useful occupations, and therefore are hunted only as an exciting sport, or for their tusks and teeth. Pringle, in his African Sketches, furnishes the following animated account of an excursion into their favorite haunts, from which we derive a very good idea of their habits and general proceedings:—

"I rode next day, with some engineer officers, into the Ceded Territory, and while they ascended the Winterberg, I constructed, with the aid of the Hottentot soldiers, a sort of booth or shieling for our shelter at night, on the skirts of a wood, in a lovely verdant glen at the foot of the mountains, all alive with the amusing garrulity of monkeys and paroquets. The aspect of the Winterberg from this spot was very grand, with its coronet of rocks, its frowning fronts, and its steep grassy skirts, feathered over with a straggling forest partly seathed by fire. As lions were numerous in the vicinity, we took care to have a blazing watch-fire, and a couple of sentinels were placed for our protection during the night. We received, however, no disturbance, and spent a very pleasant evening in our 'greenwood bower;' the spot, in jocular commemoration of one of the party, being thenceforth denominated Fox's Kraal or Shieling.

"Next day we followed the course of the Koonap, over green sloping hills, till the increasing ruggedness of the ravines, and the prevalence of jungle, compelled us to pursue a Kaffir path, now kept open only by the passage of wild animals, along the river margin. The general character of the scenery I have already described. During the forenoon, we had seen many herds of quaggas, and antelopes of various kinds, which I need not stop to enumerate; but after midday we came upon the recent traces of a troop of elephants. Their huge footprints were everywhere visible; and in the swampy spots on the banks of the river, it was evident that some of them had been luxuriously enjoying themselves by rolling their unwieldy bulks in the ooze and mud. But it was in the groves and jungles that they had left the most striking proofs of their recent presence and peculiar habits. In many places, paths had been trodden through the midst of dense thorny forests, otherwise impenetrable. They appeared to have opened up these paths with great judgment, always taking the best and shortest cut to the next open savanna, or ford of the river; and in this way their labors were of the

greatest use to us by pioneering our route through a most intricate country, never yet traversed by a wheel-carriage, and great part of it, indeed, not easily accessible on horseback. In such places, the great bull elephant always marches in the van, bursting through the jungle, as a bullock would through a field of hops, treading down the brushwood, and breaking off with his proboscis the larger branches that obstruct the passage, whilst the females and younger part of the herd follow in his wake.

"Among the mimosa trees sprinkled over the meadows, or lower bottoms, the traces of their operations were not less apparent. Immense numbers of these trees had been torn out of the ground, and placed in an inverted position, in order to enable the animals to browse at their ease on their juicy roots, which form a favorite part of their food. I observed that, in numerous instances, when the trees were of considerable size, the elephant had employed one of his tusks exactly as we would use a crowbar — thrusting it under the roots to loosen their hold of the earth, before he attempted to tear them up with his proboscis. Many of the larger mimosas had resisted all their efforts ; and, indeed, it is only after heavy rains, when the soil is soft and loose, that they can successfully attempt this operation.

"While we were admiring these and other indications of the elephant's strength and sagacity, we suddenly found ourselves, on issuing from a woody defile, in the midst of a numerous herd of those animals. None of them, however, were very close to us ; but they were seen scattered in groups over the bottom and sides of a valley two or three miles in length, some browsing on the succulent speckboom, which clothed the skirts of the hills on either side, others at work among the young mimosas, and sprinkled over the meadows. As we proceeded cautiously onward, some of these groups came more distinctly into view — consisting, apparently, in many instances, of separate families, the male, the female, and the young of different sizes ; and the gigantic magnitude of the chief leaders became more and more striking. The calm and stately tranquillity of their deportment, too, was remarkable. Though we were a band of about a dozen horsemen, including our Hottentot attendants, they seemed either not to observe, or altogether to disregard, our march down the valley.

"As we rode leisurely along through a meadow thickly studded over with clumps of tall evergreens, I observed something moving over the top of a bush close ahead of us, and had just time to say to the gentleman next me, 'Look out there !' when we turned the corner of the bush, and beheld an enormous male elephant standing right in the path, within less than a hundred paces' distance. We halted and surveyed him for a few minutes in silent admiration and astonishment. He was, indeed, a mighty and magnificent creature. The two engineer officers, who were familiar with the

appearance of the elephant in his wild state, agreed that the animal before us was at least fourteen feet in height; and our Hottentots, in their broken Dutch, whispered that he was 'een groot gruwzaam karl—banià, lanià groot!' or, as one of them translated it, 'a hugeous terrible fellow, plenty, plenty big!' The elephant at first did not seem to notice us, for the vision of the animal is not very acute, and the wind being pretty brisk, and we to the leeward of him, his scent and hearing, though keen, had not apprised him of our approach. But when we turned off at a gallop, making a circuit through the bushes to avoid collision with him, he was startled by the sound of our horses' feet, and turned towards us with a very menacing attitude, erecting his enormous ears, and elevating his trunk in the air, as if about to rush upon us. Had he done so, some of us would probably have been destroyed; for the elephant can run down a well-mounted horseman in a short chase; and, besides, there was another ugly defile but a little way before us, where the only passage was a difficult pass through the jungle, with a precipice on one side and a wooded mountain on the other. However, the 'gruwzaam karl,' fortunately, did not think it proper to give chase, but remained on the same spot, looking steadfastly at us; well pleased, no doubt, to be rid of our company, and satisfied to see his family all safe around him. The latter consisted of two or three females, and as many young ones, that had hastily crowded up behind him from the river margin, as if to claim his protection, when the rushing sound of our cavalcade startled their quiet valley."

Genus *Hippopotamus*. Next to the elephant the *Hippopotamus* is the most bulky of the terrestrial mammalia. It is an awkward, ungainly creature, of sluggish movements on the land, but, "amidst the flood, flexible and active as the smallest swimmer." The skin is nearly destitute of hair, and has, underneath, a thick coat of fat, like the swine. Although M. Desmoulins has designated—and with some degree of probability—two species, one peculiar to the Cape of Good Hope, and the other to Senegal, the subject is still involved in so much obscurity and uncertainty, we shall confine our observations to the only authentic species known.

H. Amphibius. This animal is a native of Africa, inhabiting all the rivers of that continent, from Egypt to the Cape, although gradually receding before the advance of civilization. The hippopotami are of gregarious habit, and nocturnal, dwelling in the water by day, and leaving it only at night, to seek their food, which consists of the succulent roots and stems of large aquatic plants. "Their system of dentition is fitted for cutting and bruising; the teeth are of large size, very heavy, and yield the finest and hardest kind of ivory. The eyes, nostrils, and ears are all placed nearly on the same plane, which allows the use of three senses, and of respiration, with

a very small portion of the animal exposed, and a shot at the whole body can scarcely ever be obtained. The color is a uniform bluish tint."

These animals are valuable to the inhabitants on account of the uses to which their skins are applied, and their excellent meat, as well as for the ivory of their teeth. Their ribs are covered with a thick layer of fat, celebrated as the greatest delicacy, and known to the colonists by the name of *Zeekuespek*—sea-cow pork. This can only be preserved by salting, as on attempting to dry it in the sun, as the other parts of the animal, it melts away. The rest of the flesh is lean, and is cut into large slices, and dried on the bushes. The colonists destroy the animal with the rifle, but the natives entrap it in pits.

Genus RHINOCEROS. The general appearance and form of this group of animals indicate great strength and power of endurance. The rhinoceros is a powerful beast, about twelve feet in length, and four and a half in height. The skin is arranged in folds, destitute of hair, and is almost impenetrable to any ordinary bullet. But the most striking feature of this animal is its horn, or horns; for some species have two. In regard to the structure of this member, Mr. Burchell makes the following interesting remarks: "Dispersed over the skin of all animals are pores, which secrete a peculiar fluid, which may be designated by the name of *corneous* matter. When these pores are separate, they produce hairs; when they are confluent and in a line, they produce the nails, claws, and hoofs; when these pores are confluent and in a ring, they furnish the corneous core of the horns of the animals of the ruminating class; and when confluent in a circular order, they supply matter for the formation of a solid horn, such as we see in the rhinoceros."

The rhinoceri are gregarious, though sometimes they go in pairs. Their food is entirely vegetable. The teeth vary according to age, and their feet have three toes, apparent externally, as if shod with blunt hoofs. The upper lip is long, extending into a narrow point, having prehensile powers, like the proboscis of the elephant, and is used to collect the food, and bring it into the mouth. They are extremely slovenly, but of inoffensive temper; yet when irritated, they are furious and revengeful, possessing enormous strength, and exercising a most formidable power with their horns, the principal one of which is nearly three feet in length, and though a blunt-looking instrument, when wielded by an animal of such bulk and force, is made to drive its way through almost any resistance. Their skins are used for various purposes, both in Africa and India, for which they are hunted, chiefly, however, by the natives, Europeans not liking to engage them. According to Colonel Williamson, they are shot with heavy guns, containing an iron ball of three ounces weight, and an aim is generally taken at the eye, or thorax, or some of the vulnerable parts where the skin is thinnest, and the part is

usually struck with the greatest precision. Williamson also affirms, contrary to the representations of some authors, that the rhinoceros is an animal of great activity, acuteness of smell, and rapidity of motion, and in opposition to the character we have given it above, ascribes to it a temper of extraordinary ferocity, wantonly attacking the elephant and travellers, sometimes even rendering the roads impassable. In further illustration of the habits of the animal, he relates the following incident: "In 1788, two officers, belonging to the troops cantoned at Dunapore, went down the river towards Monghyr, to shoot and hunt. They had encamped in the vicinity of Derriapore, and had heard some reports of a rhinoceros having attacked some travellers many miles off. One morning, just as they were rising, about daybreak, to go in quest of game, they heard a violent uproar, and, on looking out, found that a rhinoceros was goring their horses, both of which, being fastened by the heel and head with ropes, were consequently unable either to escape or resist. The servants took to their heels, and concealed themselves in the neighboring jungles, and the gentlemen had just time to climb up into a small tree, before the furious beast, having completed the destruction of the horses, turned his attention to their masters. They were barely out of his reach, and by no means exempt from danger. After keeping them in dreadful suspense for some time, and using some efforts to dislodge them, seeing the sun rise, he retreated to his haunt, not, however, without occasionally casting an eye back, as with regret at leaving what he wanted the power to destroy."

R. Indicus.—The Indian Rhinoceros. We have already sufficiently described this animal in our statement of the characters of the genus, and will, therefore, only add one or two paragraphs from Dr. Parsons's interesting account of a young specimen exhibited in London in 1739: "He was fed with rice, sugar, and hay; of the first he ate seven pounds, mixed with three of sugar, every day, divided into three meals, and about a truss of hay in a week, besides greens of different kinds, which were often brought to him, and of which he seemed fonder than of his dry victuals; and drank large quantities of water at a time, being then, it seems, two years old.

"He appeared very peaceable in his temper, suffering himself to be handled in any part of his body, but outrageous when struck or hungry, and pacified in either case only by victuals. In his rage he jumped about, and sprang to an incredible height, driving his head against the walls of the place with great fury and quickness, notwithstanding his lumpish aspect."

R. Sondaicus. This species differs from the foregoing, physically, in a more elongated head and muzzle, and morally, in the possession of a milder disposition. Travellers represent this rhinoceros as perfectly harmless, unless first attacked. It is of nocturnal habit, and in its night-rambles occasions

serious injury to the plantations of coffee and pepper which are laid out in the fertile districts which it selects for its retreat.

R. Sumatranaus. This is a hog-shaped animal, of a dull brown color, with small, pointed ears, lined and edged with short, black hairs. But the distinguishing feature of the species is two black horns, the larger of which is placed immediately above the nose, pointing upwards, and bent a little back, being about nine inches in length. The smaller is about four inches long, of a pyramidal shape, flattened a little, and placed above the eyes, standing in a line with the upper horn immediately above it.

R. Africarus. This species is a native of Africa, and formerly abounded in the vicinity of the Cape Colony. It resembles the animal just described in its hog-like shape, and the possession of two horns. In South Africa the flesh of this animal is much esteemed as food, and is said to be excellent, resembling beef. The tongue is considered the most delicate part. When one is killed, the neighbors all flock around it, and encamp by its side, until they have consumed it entirely, being scarcely so provident as to dry any part of the flesh for future use.

R. Simus.—The Flat-nosed Rhinoceros. This species is also armed with two horns, but is distinguished from the former by its flattened nose and mouth, and larger size. M. Burchell says, "In my travels in Southern Africa, I met with this animal for the first time near latitude 26°. They frequent the fountains and streams every day, not only for drink, but also for the purpose of rolling in the mud, which, by adhering to a skin entirely free from hairs, serves to protect them from the scorching heat of the climate."

Genus HYRAX. At first view it would seem that this small group of diminutive animals would be more appropriately placed almost anywhere than among the large and powerful Pachydermes, approaching as they do very nearly the form of the Rodentia, and resembling a small hare. Their habits, too, are quite different from the other pachydermes; for, unlike the elephant, rhinoceros, swine, and tapir, they avoid the morass and sluggish stream, and make their home among the rocks and in dry retreats. Yet, notwithstanding this wide difference, they possess characters that necessarily place them in this order, which are particularly seen in the structure of the head. Besides, the number of toes in the hyrax is four before, and four behind, as in the tapir. They are united by the skin to the very nail, as in the elephant and rhinoceros, and represent those of the former animal, both in their figure and in the manner they are placed upon the foot, while the wrist joint very closely resembles that of the tapirs.

H. Syriacus.—The Syrian Hyrax. This curious animal is about eleven inches in length. The upper parts of the body are brownish-gray, the lower parts white. It is found in Ethiopia, Abyssinia, Arabia, and abounds in

Syria, particularly on Mount Lebanon, and is probably the animal mentioned in the Scriptures under the name of *cony*. It is of gregarious habit; and frequently several dozens of them sit upon the great stones at the mouths of caves, and warm themselves in the sun. They do not stand upright upon their feet, but seem to steal along as in fear, their belly being nearly close to the ground, advancing a few steps at a time, and then pausing. They have something very mild, feeble, and timid in their deportment; are gentle, and easily tamed, though, when roughly handled at first, they bite very severely.

H. Capensis.—The Cape Hyrax. For form and general appearance, we refer the reader to the preceding generic description. The animal is about the size of a hare, and in color is of a uniform grayish brown. It frequents the regions around the Cape of Good Hope, living in the clefts of the rocks. In many of its motions, especially when retiring to its burrow, it resembles the common rabbit.

Genus *Sus*.—The Swine. The general appearance, form, and other characters of this group are too well known to require any further description. We shall be contented, therefore, with a brief glance at the several species.

S. Ferus.—The Wild Boar. This animal, when fully grown, is about two and a half to three feet in height. The hair is brownish-black, and is of considerable length about the head and mane. It frequents the wildest and most retired portions of Europe and Asia, living solitary, choosing some deep recess for its lair, near a convenient watering-place, and having access to some glade, or path, which conducts to the more open country. It sallies forth only in the evening in search of food, which is chiefly vegetables, roots, or fruits, and in the season of harvest very considerable damage is effected, not only to the grain crops, but also to the vineyards. It is only at a particular season that the wild boar becomes somewhat gregarious, and selects a female, after an exhibition of prowess against its rivals. The females, on the contrary, are generally gregarious, several litters joining company, and making excursions together. The young grow for several years, and remain with the mother and herd until they have arrived at maturity. Hunting the wild boar was formerly an occasion of great interest in many parts of Europe, but it is only in India that it is now really followed as a sport.

S. Papuensis.—The Papuan Hog. This animal abounds in the luxuriant forests of New Guinea, where it feeds on the succulent roots and rich fruits peculiar to that region. It is from eighteen to twenty inches in height, the body is round and slender, and has only eight teats, while the common sow has twelve. The Papuans keep them confined in enclosures around their cottages. Their flesh is as sweet and delicate as that of a chicken.

S. Communis.—The Common Hog. The numerous domestic varieties of swine are so well and universally known as to render any particular description of them here entirely superfluous. Most of them have been introduced from England, as the Hampshire, Berkshire, Suffolk, and Cheshire breeds, improved by crosses, but not materially changed. The Chinese pig has now become quite frequent. These animals are commonly black, the form characterized by a fine appearance, small head, thin ears, and short and slender legs. They are easily fed, and often become one vast mass of fat, rendering them unfit for ordinary table use. It is probable that a cross with some other breed would produce a more desirable variety.

The domestic pig appears to possess considerable intelligence and capability of attachment. An anecdote is related of one which became attached to a bulldog, and would follow and sport with it in various ways. It would also follow its owner, when accompanied by the dog, for a distance extending half a dozen miles; and the dog being very fond of swimming, the pig imitated the same propensity,—a propensity which is not usual or natural in such animals,—and apparently had much pleasure, and showed a good deal of dexterity, in this element. If any floating substance were thrown into the water for the dog to bring out, the pig would follow, and dispute the prize with its canine companion, exhibiting much quickness and adroitness. The two animals always slept together. Most of our readers remember the amusing tricks performed by trained pigs, which are often exhibited by showmen about the country.

S. Babiroussa.—The Hog Deer. This species is found in the Molucca Islands and some others of the Indian Archipelago. It is a handsome animal, and derives its name from two enormous tusks which project from the jaws, and curve upward and backward on each side of the nose, something like the horns of a deer.

S. Eliani.—Ælian's Wart Hog. This animal is remarkable for its large and strong tusks, and for the swollen and warty appearance of its face. Between the ears arises a mane, which extends along its neck and back, the single hairs of which are often ten inches long. These bristles do not have an individual root, but from each root spring from three to six hairs, forming a tuft. It is a native of Africa, frequenting low bushes and forests. When seeking food, it creeps on its bent fore feet, and in this posture digs up the roots on which it feeds, by means of its powerful corner teeth.

S. Larvatus.—The Æthiopian Wart-Hog. There is not, according to the traveller Daniels, a more disgusting or savage animal than the wild hog of Africa. It abounds in the woods of Sitsikamma, and is generally hunted by dogs, which, with its long, sharp fangs growing out of the lower jaw, it sometimes lacerates in a dreadful manner. Two remarkable excrescences

grow like two ears out of its cheeks, and the lower part of its head appears as if enclosed in a sack.

S. Torquatus.—The Collared Peccary. The eastern side of South America is the habitat of this species, where it frequents the forests, living on vegetables and roots. The color is a kind of yellowish-gray. The hairs along the neck and back are very long, and form a bristly mane, which is erected when the animal is irritated. From behind the shoulders to the fore part of the neck the bristles are whitish, forming a narrow, oblique line of that color, resembling a collar, whence its specific name. It has a peculiar gland upon the rump.

*S. Lubiatu*s.—The White-Lipped Peccary. This animal is considerably larger than the last. The hairs of the body are black, and the lips and nose white. The species inhabits Paraguay, is of gregarious habit, assembling in vast troops, which are commanded by some old male. A thousand sometimes congregate together, and stretch for a mile in length. They obey implicitly the orders of the leader. If any obstacle is to be overcome, a council of deliberation is held, and when the leader moves, all follow. They are expert swimmers, and wide rivers are crossed by them with ease. These bands would attack a horseman if in the way, or molesting them.

Genus *TAPIRUS*.—The Tapirs. Of this singular genus there are three species known, two inhabiting the American continent, and one some of the Asiatic islands. The animals of this group have the nose and nostrils more prolonged than in any of the other pachyderms except the elephant, employing this part of their structure as an organ of touch and smell, and partially of prehension.

*T. Americana*s. The Tapir of South America is from five to six feet in length, powerfully organized, and is covered with a scanty, close-lying hair, forming a bristly mane upon the neck. The color is a deep-brown. It delights in the water, to which it flees when attacked by dogs, and its thick skin is said to be impervious to a musket ball. It is, however, taken by being trapped, or shot with poisoned arrows.

T. Pinchaque.—The Tapir of the Andes. The size of this species is nearly the same as that of the former. On the chin there is a white spot, which is prolonged to the angle of the mouth, and returns upon the upper lip for near half its length. The color is blackish-brown.

The American tapirs are harmless, inoffensive creatures, sluggish in the extreme, inhabiting the thickest forests, and issuing only on the approach of twilight to feed, after a day spent in profound sleep. They feed chiefly on vegetables; are easily tamed, become familiar with, and know their master, and will follow him like a dog. It has been suggested that they might be trained as beasts of burden, for which their great strength would well fit them.

T. Malayamus. The Malay tapir has no mane, and the colors are a very deep purplish-brown on the head, shoulders, fore legs, and also on the hind quarters and hind legs. The rest of the body is white. This animal is somewhat larger than the American species; but is equally inoffensive, capable of being tamed, and becomes as familiar as a dog.

We now come to the last, and, in many respects, most interesting division of the Pachydermous Order, viz., the *Equidae*, or solidungular family, comprising the horse and the ass. As in the earliest period of human history the dog appears as the intimate companion of man, so history offers no picture of human society, however remote, where the horse and the ass do not occupy a prominent place in the foreground. The grace and elegance, the speed and strength of the horse, and the patient endurance and sure-footedness of the ass, have from time immemorial given them very nearly, if not quite, the first place among domestic animals.

The *Equidae* are graminivorous animals, but are by no means delicate in regard to the quality of their food. Brambles and thistles, prickly shrubs and the coarsest grasses, are alike welcome. Like many other animals, they see well in the dark, and instances are recorded where they have carried their riders over the most dangerous passes, where man would scarcely have ventured in broad daylight. Their eyes being placed far apart, they are able, when the head is down, to observe objects with ease, both before and behind, as well as sideways. Their senses of hearing and smell are very acute, and as in a wild state they seldom lie down, and sleep little, they consequently have an individual security, as well as the collective protection of their gregarious habits. The tame horse endures the severest climate, and braves any degree of cold, providing food can be found; but the ass delights in the sunny and warm skies of the south. There is a great difference, intellectually, between all species of wild horses and the domestic animal, whose acts frequently exhibit mental attributes quite equal to those of the dog. A tenacious memory, and a power of abstraction and comparison, and a generosity and benevolence of disposition often manifested, have made the horse an object of most affectionate solicitude among some nations, and of deep interest in all. All the *Equidae* are of a frolicsome disposition, sociable and emulous; the ass even has the instinct of ambition, and will try his speed against competitors, while the tame horse is gay and proud, and seems to court the praise of his master.

The period of gestation is about eleven months, and the young, which are usually born in April or May, see, and have the use of their limbs from their birth. They are thin, short-bodied and short-ribbed animals, standing very high on the legs, full of playfulness, sporting about their mother, scratching

their ears with the hind legs, and astonishing the stallion, if he is present, with their wild glee, and he raises his crest, flings up his tail, snorts, and gallops about with every sign of extreme pleasure.

The Equidae are separated into two genera—*Equus Caballus* and *Asinus*.

EQUUS CABALLUS. The feral, or wild horses of the American continent, are generally admitted to be the offspring of the domestic horses brought from Europe by the Spaniards, although some observers, whose opinions are entitled to respect, do not coincide with this opinion. We may also add in this connection, that a distinguished naturalist found the bones of horses in company with those of the *Megatherium* in alluvial deposits, and evidently belonging to the same zoölogical period. It is probable, therefore, and in harmony with the order of Nature, that vast troops of native horses have crossed the American continent, and filled the broad and fertile savannas of North and South America with equine life, in periods long antecedent to the time of Columbus.

The immense plains and steppes of Asia have several species of wild horses, which are evidently aboriginal, and not, as some suppose, the degenerate stock of the domestic breeds. Although the feral horses of America and Asia differ very materially in size, and other important characters, they have alike the instinct of associating in vast herds for mutual protection. Taught by experience, they exercise such constant vigilance, and adopt such an effective system of defence, that neither bears, nor wolves, nor even the terrible pumas venture to encounter them.

Equus Caballus Domesticus.—The Domestic Horse. All our domestic horses are probably cross-breeds from ancient forms, of whose peculiar characteristics we know little at the present day. They are, however, improved breeds, and are adapted to the wants of the communities in which they are found. "Varying from race to race, from individual to individual, there is no absolute standard of beauty in a practical view, although there may be a maximum of ideal beauty for the painter and sculptor, physically unattainable, and probably undesirable; therefore general qualities of health, age, soundness, structure, and temper being admitted, the horse should be considered in relation to the particular purposes it is bred for, and the social condition and predominant desires of each nation." In Arabia, for example, the development of the breed has been shaped by the genius and needs of the people. In Spain, the animal differs in outward appearance from an English or American race-horse; it is more curvilinear in outline, because this form is most graceful, and adapted to measured steps and elegant curvettings; with us, on the other hand, its form is more rectangular, best adapted for impelling the mass with velocity forward. The beauty of the first is not



AMERICAN TROTTING HORSE
"Black Hawk"



PERCHERON DRAFT HORSE
"Orleans"



THOROUGHBRED RACE HORSE
"Gray Eagle"

that of the second. Comparing the blood-horse with many of our magnificent cart-horses, we find even greater differences in their respective beauties; and yet neither the racer, nor the last mentioned, possess the characters best suited for a war-horse, nor for the road, and other mixed purposes; hence beauty in horses is a relative term, and must depend upon modifications, adapted for particular purposes.

The intelligence and sensibility of the horse are very little inferior to those of the dog. We have seen them perform a great variety of amusing tricks, to which they had been trained, such as firing off a musket, feigning death, fear, and rage. Their attachment to their masters is often very strong. There is an instance recorded, where, when a rider broke his leg in a fall, and the limb became entangled in the stirrup, his horse intelligently assisted him in getting it out. It is also related of an Arabian mare, that when her master, wounded and captured, and bound with cords, was lying on the sand, awaiting the murderous knife of the foe, or, what was worse, the decision to carry him away into slavery, she seized the opportunity, when the attention of the enemy was momentarily distracted, and lifted her helpless master with her teeth, placed him upon her back, and was skimming across the desert far away, with the speed of the wind, before the captors could recover from their astonishment. The attachment of horses to their home, where they are kindly treated, is well known, there being cases where they have swam broad and rapid rivers to return to it. The Arabs all declare that their horses or mares, when sleeping abroad in the open air, will wake them on the approach of an enemy or beast of prey. Their gentleness may be witnessed in the Bedouin tent, where the mare, foal, and children all sleep and play together, without the least fear of accident.

The horse is very susceptible to kindness, and the most vicious may be subdued by humane and gentle treatment. Colonel Smith relates an instance of the subjugation of a superb and beautiful charger which had been considered perfectly unmanageable. He had killed one or two grooms, who had attempted to ride him, when he was purchased by an English officer, of great firmness and courage, and equal gentleness, who soon reduced him to a state of complete obedience, so that he would follow his master like a dog, seek his caresses, and even allow ladies to ride him.

Considering these noble traits of character, we cannot but denounce with indignation the ill-treatment, wanton abuse, and monstrous cruelties of which the horse is too frequently the subject. The animal ought to attain the age of thirty or thirty-five years, yet through ignorant management, inhuman treatment, and over-work, few horses reach the age of fifteen or twenty years, and nearly all are really old at ten. Every day we see exhibitions of these outrages, and we fear they will never be abated until our laws shall provide more efficiently for the punishment of such barbarities.

There are not many "thorough-bred" horses in this country, the wants of the community requiring a mixed breed, as better suited to general purposes. A "thorough-bred" is a descendant of the Arabian. The Arabians are the most skilful horse-culturists in the world. The Barb of North Africa, and the Turk from the Bosphorus, have also their representatives here. They are elegant and superb animals, celebrated equally for beauty and speed. Previous to the war the southern people had given more attention to the improvement of breeds than those of the north, and, consequently, during the late civil war had the advantage of a superior cavalry. The horses most valued by us are the Morgan, Messenger, and Black Hawk breeds. All the good horses in the country owe their fine qualities to their inspiriting blood.

The English race-horses and hunters have long been renowned for beauty, speed, and strength, and probably, on the whole, are superior to the most cultivated breeds of any other country, equalling the Arabian in beauty, and surpassing them in power and stature. We have often heard stablemen and horse-fanciers discussing the relative value of color as indicative of the disposition and other attributes of the animal; but long and close observation has shown that little reliance can be placed thereon, as there are horses equally good of all colors. The experience of hundreds of years verifies the proverb, that "*every good horse is of a good color.*"

Numerous species and breeds of horses are distributed throughout the different countries of the world, differing in character and qualities not materially from corresponding races well known to us, but varying in size from the Toorkee horse, which is often sixteen hands high, to the Shetland pony, which is frequently not larger than a Newfoundland dog. The Toorkee horse is capable of immense fatigue and privation, and has been known to travel nine hundred miles in eleven consecutive days. But the most remarkable species we have met with is the Shrubat-ur-Reech, or "drinkers of the wind," of Morocco; and they might well be supposed to live on air, as they are apparently nothing but a bag of bones. In shape they resemble the greyhound, rather low, and, although destitute of flesh, "their spirit is high, and endurance of fatigue prodigious," frequently travelling fifty or sixty miles without a single halt. An extraordinary fact in regard to this animal is, that it is deprived of its natural aliment almost from birth. Until it is seven years old it is nourished by the milk of the she camel, and when subjected to toil, it is fed only once in three days, on camel's milk, with, sometimes, the addition of a handful of dates; and yet with such scanty food, unnatural too, as it must seem to us, the Shrubat-ur-Reech retains a surprising vigor, and an astonishing capacity for speed.

Genus ASINUS. Excepting some slight structural characteristics, the chief distinctions between the horse and the asinine group evidently lie in

their instinctive aptitudes and mental capacity, the former being of a social temperament, spirited, proud, and capable of a high degree of education, while the latter is dull, intractable, and solitary. The ass tribe has long ears, a short standing mane, and the tail furnished with only a tuft of hair at the end.

A. Domesticus. The domestic ass is patient and laborious, slow and obstinate, and as it receives little care or kindness from its master, it is not strange that it is both slow and vicious. When offended, it gives warning by drawing back the lips, and showing the teeth; it repels an insult by a kick, and when roused by danger will fight with skill and obstinacy. It is more abstemious than the horse, and yet there is no domestic animal, in proportion to its bulk, that can carry a greater weight, or continue to labor longer without rest. This animal is emphatically the poor man's horse in every country but ours, where the ox and the horse are within the reach of all, and are better adapted to the condition of a civilized community.

A. Hippotigris.—The Striped Ass, or Zebra. This beautiful animal, of which there appears to be three varieties, is a native of South Africa, often appearing near the Cape of Good Hope, where a fine of fifty dollars is exacted from any person who kills one of them. The zebra differs so much from the true ass that some naturalists have hesitated to place it in the same group. In size it is larger than the ass proper, and less than the horse; but it has all the obstinacy and viciousness of the ass, and, so far, all attempts at domestication have proved fruitless. Its form is graceful and elegant, and its short, fine, and thick hair is handsomely marked with bands of alternate brown and yellow in the male, and black and white in the female, which give it a very pleasing appearance.

ORDER VIII.—THE RUMINANTIA.

The ruminating animals are those which chew the cud, and, with a few exceptions, have cloven hoofs. Their food consists of grass, leaves, moss, and tender twigs, which, being partially masticated, is swallowed and retained in the stomach for a few moments, when, by a peculiar provision of nature, it is returned to the mouth, for further preparation, before its final passage to the digestive organs. The ruminants have eight incisive teeth in the lower jaw, and none in the upper, but instead a sort of callous *pad*. Each jaw has twelve grinders, six on the side. The order is distributed over all the known world, excepting Australia, which appears to have a form of life peculiar to itself. Among the members of this great family are found those animals which are the most useful to man, as well as many that are distinguished for their

exceeding gracefulness, beauty of markings, and elegance of form; and all are noted for docility, mildness of temper, and gentleness of disposition. At the head of this division is rightly placed an animal which clearly connects it with the pachydermatous order, just described, for the camel, although clearly a ruminant, is very nearly solidungulous, or whole-hoofed, like the horse.

Genus *CAMELUS*.—The Camel. In the earliest periods of human history this animal, as well as the ass, had yielded to the domination of man, and there is no evidence that from the time of its domestication it has ever been found in a wild state. The form, size, and appearance of this useful beast are probably familiar to all our readers, as the numerous menageries which periodically visit all parts of the country, most of which have a specimen, have furnished them with opportunities for personal inspection. Its habitat is Africa, Syria, Persia, Chinese Tartary, and Arabia, and it appears to be placed by the Creator in those regions where man would, to all appearances, have been nearly helpless without its services. Its whole structure shows a peculiar fitness for the labors it is required to perform, and for the long journeys over burning, sandy deserts, in which it is constantly engaged. Furnished with a double stomach, it takes in a supply of water sufficient for several days, and instances are related where many human lives have been preserved on those vast deserts, far from water-springs, by a resort to this reservoir in the bosom of the poor creature, which is thus sacrificed to man's necessity. Although the structure of the respiratory organs does not indicate a great power of endurance, yet it is well known that camels will travel sixty consecutive hours, on tolerably level ground, without rest. The feet are covered with a thick, horny skin, to shield them from the sand, flints, rocks, and lava, on which they are obliged to walk. They kneel to receive their burdens, and also to have them removed. We can conceive of no animal more patient or laborious, more obedient to the will of its master, and consequently more entitled to the kind care and consideration of man.

There are two species, the *C. Bactrianus* and *C. Dromedarius*. The former has two humps, one small, placed on the back, near the shoulders, and the other, much larger, farther towards the rump. This species is able to carry burdens of from four to six hundred pounds. The latter, called the Arabian Camel, or Dromedary, is considerably smaller. It has but one hump, and carries a weight of from three to four hundred pounds. There are several varieties of the Arabian camel, and the term *Dromedary*, strictly speaking, can be applied to but one, an animal remarkable for its great capability for speed. The Greek word *Dromedary*, signifies a swift courser, and does not well designate the common varieties of the Arabian species.

For a great many centuries the entire commerce between Asia, Africa,

and Eastern Europe was carried on by the agency of these useful animals, which, on this account, have, not inappropriately, been styled "ships of the desert." By their labor cities were built up, and adorned with barbaric splendor, and their markets supplied with the productions of all climes. What the railroad, steamboat, and ship are to us, so was the camel to numerous nations, through long periods of history.

The great value of the camel for purposes of transportation induced the American government to attempt the propagation of the species in the southern, or rather border portions, of the Union, where they might be usefully employed in carrying army supplies in regions where defective roads render the passage of wagons difficult or impossible. Although it is said the experiment promises success, we apprehend, so swift is the march of improvement, that the locomotive and railroad will cross those plains, and penetrate those now almost inaccessible wilds, long before the camels shall have become sufficiently numerous to be of much service.

Genus *AUCHENIA*.—The Llamas. There is but one species known, the *A. llama*, a native of South America. It is covered with long hair, of a general brown color, and is about three and a half feet high. It is an animal of great strength and power of endurance considering its size, is docile and good-tempered, easily domesticated, and is extensively employed in the transportation of merchandise through the mountain passes of those southern countries. Like the camel, it seems to have a peculiar fitness for the regions where nature has fixed its home, and for the peculiar wants of man, to whom it so readily surrenders its freedom and renders its services.

Genus *MOSCHUS*. The Pouched Musk is the most celebrated species. Its size that of a roe. The Thibet musk is found in the mountains of Central Asia, and is a pleasant-looking, though not a handsome animal. The genus derives its name from the odorous secretion known as *musk*, which is carried in a peculiar pouch or bag. It is a popular perfume, and is extensively used in all civilized countries. There are several species, some of which are destitute of the musk bag.

Genus *CERVUS*. This large group of ruminants contains the following sub-genera: *Alce*, the Elks; *Rangifer*, the Reindeers; *Dama*, the Fallow Deer; *Elephas*, Stag proper; *Rusa*, the Sauburs of India; *Axis*, indigenous to Bengal, and handsomely spotted with white; *Capreolus*, the Roe-bucks; *Mazama*, Chilian Deer; *Subulo*, the Brochets; and *Stylocerus*, the Muntjaks, the smallest of the family. Our limited space, however, will not allow an extended notice of each. We must be contented with brief descriptions of three of the most prominent, and refer the reader to volume VII. of the "Naturalist's Library" for a detailed account of the remainder.

C. Virginianus.—The Common Deer. These beautiful and interesting animals were once the life and ornament of the forests of North America. Inoffensive and playful, they gamboled in the sunny glades, or on the hill-slopes, and by the calm, clear lakes and sparkling streams; and although hunted and destroyed by the aborigines, with their rude weapons, there was no perceptible diminution of their number. Their natural increase more than made good their loss. But on the appearance of civilization all was speedily changed. As forest after forest disappeared, the deer, like the poor Indians, had to seek new homes; besides, the more effective and murderous weapons introduced by the whites largely increased the rate of destruction, and threaten their complete annihilation at no distant day.

The common deer is about five feet in length. The antlers, which are confined to the male, shoot out from the top of the head, and incline backward. They consist of two main trunks, which give out numerous prongs, like the branches of a tree. The deer possesses keen senses, especially hearing and smelling. The sight, though good, does not equal in power the senses just named. It is necessary for the hunter to approach against the wind, otherwise the animal will discover him by the scent. The slightest noise appears to excite its fears more than any other cause, while the sight of unaccustomed objects seems rather to arouse curiosity than produce terror. The buck, however, is courageous when attacked, and will fight bravely and desperately, not unfrequently seriously wounding both hunter and dogs.

In the older states the deer has become very rare. There are some in Massachusetts, chiefly on Cape Cod. In the most northern parts of New England it is more numerous, while in the North-western and Southern States it is yet quite plentiful.

Genus ALCE.—The Elks. The elk is the largest of the extensive family of the Cervidae, and belongs to both hemispheres. It was formerly abundant in Europe, but has retired from its persecutors to the depths of the forests which lie contiguous to the Asiatic boundary. The elk of Ceylon differs from the common elk in having a short, thick mané, that covers the neck and throat. In height it is about five feet. It is of gregarious habit, gentle and timid, but impatient of restraint, and not easily tamed. The female is smaller than the male, and has no horns.

A. Americanus.—The Moose. This animal, now driven to the most inaccessible parts of the United States, Nova Scotia, and the vast forests of British America, once abounded in all parts of the North American continent, as far south as 43° north latitude. We can remember when it was quite numerous in the central parts of Maine, around Moosehead Lake, and in the wild and picturesque region that lies between Sebec Lake and Mount Katahdin. The moose is the largest and most powerful of the elk tribe,

sometimes attaining the height of seven feet, and a weight of ten or eleven hundred pounds. The antlers or horns are peculiar. Two trunks spring upward, and somewhat backward from the apex of the head, from which others shoot forth, spreading out like the branches of a seraggy oak. These appendages, although strong, are not usually employed as weapons of defence, although we remember an instance, when we were a youth, where a hunter was seized on the antlers of the infuriated and bewildered beast, and made to take a fearful ride through the forest.

The moose is often hunted with the gun in the summer and autumn, but in winter the hunters prefer to seek it in its lair. The favorite food of these animals is the supple and tender twigs of the maple, yellow birch, willow, and particularly of a graceful and elegant shrub known as *moose-wood*. In thickets, where there is an abundance of these trees, they make their retreat, in small parties, trampling down the snow and forming a kind of enclosure, which is enlarged as they forage outwards, after having exhausted the supply in the centre. This enclosure often proves a fatal prison and snare to them.

There is nothing more exciting than the chase of the moose, as we know by experience. The hunters go in small parties of three or four, provided with snow-shoes, hand-sleds, blankets, a supply of provisions, and cooking utensils. The march over frozen lakes and rivers, and through the primeval forests, produces an exhilaration of spirits far beyond the power of sparkling champagne or far-famed Burgundy, and infinitely more salubrious; and when the hunter has lighted his camp-fire, and, wrapped in his blanket, lies down on the soft and fragrant hemlock foliage to rest, he is lulled to sleep by the mysterious song of the wind and trees,—that wonderful, almost spiritual cadence, which rolls, like the low tones of an organ, through the boundless woods, plunging the soul into a delicious reverie, and transforming the hunter, for the time being, into a poet.

The moose is keen-scented, and must be approached from the leeward. A slight fall of rain and a thaw, suddenly followed by freezing, are favorable to the hunters, as they can glide swiftly over the icy surface, while the poor hunted animals, scenting danger from afar, and striving to flee, slump through the treacherous crust, and wound their legs in attempts to extricate themselves: they are thus easily overtaken. As the moose fights bravely and effectively with its fore feet, the hunter contrives to get in the rear and hamstrings it, when it falls an easy prey.

The American elk is an awkward looking animal, of a brown color, varying in shades, but we have never seen a specimen so dark as the one figured by Colonel Smith. The gait of the animal is neither a gallop nor trot, but a kind of shambling pace, and not remarkable for swiftness. Its flesh is about the color of that of a year old calf, and is finely flavored, and we have never

known anything more palatable than the juicy steaks of which we have partaken in the wilds of Maine.

Sub-genus *RANGIFER*. — The Reindeer. This animal, which is equal to the stag in size, seems to have been designed by Providence to occupy a supreme place in the economy of human life among the peoples where nature has given it an existence. It is nearly the sole dependence of the Icelanders, Laplanders, and other inhabitants of the frozen regions of the north. It seems almost incredible that an animal of this bulk should thrive and grow fat in a region whose rigorous climate will allow no vegetation to appear, except a few stunted shrubs and the lichens, which, in spite of cold ice, cover the desolate fields. On this last the reindeer feeds, digging the moss out from under the snow in winter with its sharp hoofs, and on this apparently scanty sustenance attains a robustness, strength, and power of endurance, which are truly remarkable. Its flesh and milk furnish the natives with a nutritious food, and its skins a clothing that defies the severest cold, while its fleetness and strength enable them to make long journeys with sledges, with extraordinary speed.

The Laplanders keep large herds of these animals, a hundred being considered scarcely sufficient for the support of a family. Some large owners keep them to let, as farmers with us let their cows, and liverymen horses and carriages. Sometimes several families which do not have over a hundred head each, unite their possessions for mutual advantage. It is difficult for us, more favored by nature, to whom all the luxuries of vegetation are cast with an unsparing hand, and to whose wants the whole animal kingdom is subservient, to conceive how whole tribes can be dependent for nearly their entire subsistence upon one single animal.

STYLOCERUS. — The Muntjaks. Although we here, at the termination of the Cervidae, have the smallest of the deer family, yet by the frequent absence of horns, and the possession of elevated bony pedicles upon the top of the head, its relationship to the comparatively gigantic giraffe is established, and it thus becomes the connecting link between the former group and the Giraffidae.

Genus *CAMELLEOPARDALIS*. Of this singular animal, only one species — *C. antequorum* — has been discovered, and this was known to Europeans only by rumor, until its existence was verified by M. le Vaillant, during his travels in South Africa. Since then numerous specimens have been obtained, and it is now a common feature in our menageries. There are few persons, therefore, who have not had frequent opportunities for personal observation. The giraffe, at maturity, is from eighteen to twenty feet high. There appears to be a curious irregularity in the organization of this animal, as Professor Owen found a double gall-bladder in one specimen, while in two others that organ was totally wanting.

"The eyes of the giraffe are singularly large, full, and clear, soft and rich as the famed gazelle's, and fringed with very long lashes. They are situated so prominently on the sides of the head as to excel, in advantage of position, those of the hare; and it is supposed that the giraffe can command a wider view of the horizon than any other creature. The surface of its skin is smooth, the hair being short, close, and flatly laid. The ground color is a dull white, warming to a rich cream tint, and deepening with age to a very faintly-red brown. The spots are of a much darker brown, and of so generally regular a form and arrangement as to give the hide the appearance of being cross-barred with whitish stripes.

"It has no incisors in the upper jaw, but twelve grinders; in the lower jaw it has twelve grinders and eight incisors. The female has four mammae, situated in the groin, and she gestates twelve months with foal. But the most instructive singularity in the physiology of the giraffe, and the one which, above all others, determines its geographical insulation and scarcity, is the remarkable adaptation of its tongue to the food which it chiefly prefers and seeks. The organ, in these specimens, is about thirty inches in length, tapering nearly to a sharp point, and endowed with greater contractility, extensibleness and flexibility than the tongue of any creature but the ant-eater. It is coated on the upper surface, and round its point, with a skin so hard and impervious, that it cannot be cut or pierced even with a sharp knife, without great pressure. The food on which the giraffe principally subsists, in its natural state, is the foliage and juicy branches of a species of the *mimosa* or *acacia*, called by the natives *kameel-doorn*, which is said to be peculiar to the valleys in which the animal is only known to have been seen, and to constitute their almost exclusive vegetation. This variety of the *acacia* abounds with very long and exceedingly sharp spines, whose puncture is as subtile as that of a needle. Yet, protected by its wonderfully impermeable covering, the flexible tongue of the giraffe securely threads its way through the foliaged danger, winds around the branches amid the spines, culling each particular leaf with more than manual dexterity, and incurring neither puncture nor laceration."

ANTILOPINA. This great genus embraces more species than all the other ruminants taken together. The beautiful and graceful antelopes which sport in the luxuriant groves of South Africa, and the bright-eyed gazelles, celebrated in the poetry and songs of the Arabs, are among the most interesting members of the family.

Sub-genus ORYX. In this group we have the gemsbok—an elegant animal, of the size of a cow, somewhat deer-shaped, with upright and straight horns. This animal was known to the ancients, and has been well described by Pliny. It exists not only in that part of Africa which lies

opposite the south of Arabia, but in the latter country, and in Persia, as far as the Indies, being, in all its localities, the southern neighbor of the gazelle and its varieties. The data are not complete enough for certainty; but this is probable, as the *isothermal* line does *tend* in that direction; and it is all, partially at least, within the action of the rains. In former times it must, from the extent of plain which has been converted into desert, have extended much farther, and it is not possible to suppose that any one acquainted with Egypt could have been ignorant of it. It is a gregarious animal, and an inhabitant of the plains; but it browses on the leaves of trees, principally those of the acacias, and not the saline plants, like the gazelle; and, therefore, when, in its progress towards the desert, the country came to produce only gazelles' food, the abu-harb (the *oryx*) must have departed or perished. As its general habits resemble those of the gazelle, it is highly probable that there are, as in that animal, many climatal varieties, and that what have been sometimes described as different species are the same. It must not be forgotten that, as the progress of cultivation has broken the domesticated ruminantia of Europe into many varieties, the progress towards desolation has done the same with the wild ruminantia of the districts under notice.

This species is rather stout in the body. Its general color is white, variously marked with black on the forehead and brush in which the tail terminates, with brown on the legs, and with rust-color between the brown and white. The horns are long, slender, and very slightly bent from the curve of the forehead throughout their length. This is the animal, the profile of which, with the horns seen as one, is supposed to have suggested the notion of the fabled unicorn; and the robust male, the long tail with a brush, the mane, — though that is much exaggerated, — and all the characters of the animal, give some probability to a conjecture which can neither be established nor refuted.

Tragelaphus Scriptus. — The Harnessed Antelope. This animal is a native of Africa, and was first discovered by Mr. Adamson in Senegal. It is a beautiful creature, about the size of the fallow-deer. The ground color is bright fulvous-bay, divided by longitudinal and transverse lines of white. The horns are black, and about seven inches long.

Rupicapra Vulgaris. — The Chamois. There are two varieties of this animal, one inhabiting the Russian Alps, and the other the European. The height of the latter is a little over two feet; the color is a grayish-brown, with a black streak extending through the eyes; the horns are black, round, and hooked backwards at the tips. The chamois is gregarious; the females produce one or two kids early in the spring. They feed on the alpine pastures, which give a richness and flavor to their flesh; and for this and the skins the hunters scale the most perilous heights, and encounter frightful

dangers in pursuit of them. The agility and sure-footedness of the chamois are remarkable, often leaping from twelve to twenty, and sometimes thirty feet.

Aplocerus Lanigera. — The Wool-bearing Antelope. In the robust and sheep-like form of this animal one fails to find any character of the elegant and slender antelope. It inhabits the Rocky Mountains, frequenting the loftiest peaks. The size is about that of the common sheep. The horns are awl-shaped, nearly erect, and pointed. The fleece is composed of long, straight, white hair, coarser than the wool of sheep, but finer than that of goats.

Genus *CAPRA*. — The Goats. These animals are furnished with horns, which bend gradually upwards and backwards, a long beard, and a coat of shaggy hair. They inhabit mountainous regions, often near the vicinity of perpetual snow; are extremely active and sure-footed, and climb steep precipices with the greatest ease and safety. Gloves are manufactured from the skins of the kids, while those of the goats are manufactured into morocco. The hair of one species, the Cashmere, is the material from which the beautiful shawl of that name is made.

C. Ægagrus. The Ægagrus is a native of the European Alps, and, though more slender, is somewhat higher than the common goat. Its limbs are stout, neck thick, and the huge horns are thrown backwards.

C. Ibex. — The European Ibex. This animal is now confined to the Alps of Switzerland and the Tyrol, and some of the Spanish mountains. It is between two and three feet in height. The color, in summer, is reddish-brown, turning to grayish in the winter. The horns are very large. Altogether, the general appearance is pleasing. It is extremely watchful, and difficult of approach on account of the delicacy of its senses of smell and hearing.

THE GOAT OF CASHMERE. Besides the true Cashmere breed, from which the celebrated shawls are made, there are several others, whose fleeces have been used for the same purpose. A traveller relates that in the kingdom of Cashmere sixteen thousand looms are kept in constant motion, each employing three men; and it is supposed that thirty thousand shawls are disposed of annually. The wool is spun by women, and afterwards colored. When the shawl is made, it is carried to the custom-house and stamped, and a duty paid in proportion to its texture and value. A fine shawl, with a pattern all over it, takes nearly a year in making.

The French have attempted to introduce this breed of goats into their own country; but the success of the experiment seems somewhat doubtful. It is, however, singular, as observed by Messrs. Cuvier and Hilaire, that no European has yet availed himself of the wool produced by most of our

domestic goats, which, though less delicate than the Thibet, would undoubtedly have yielded a web far more fine and even than the most admired merino sheep.

The male goat, in the menagerie of the Jardin des Plantes, is admired for his symmetry, his graceful motion, and his quiet temper. But he has a much greater distinction—he is free from smell; whereas nearly all European goats are known to emit a strong, unpleasant odor. The Cashmere goat is of middling size; two feet high at the neck joint, and two feet ten inches from the snout to the root of the tail; his head, from the snout between the horns, is nine inches, and his tail five. His horns are erect and spiral, diverging off towards the points. His silky hair is long, flat, and fine, instead of gathering up in bunches, like that of the Angora goats. It is black about the head and neck, and white about the other parts of the body. The woolly hair is always of a grayish white, whatever be the color of the rest.

C. Communis.—The Common Goat. This animal is so well known that description is unnecessary. It is kept on account of its milk and the flesh of its young, the former being in much request as a medicine for persons of weak constitutions, or threatened with pulmonary diseases. It is also frequently kept about stable-yards as a pet, where it becomes remarkably tame and attached, throwing off all the timidity and shyness which it exhibits naturally. Ships and steam-packets also keep a number of goats on board, for the supply of fresh milk which they furnish.

Genus *Ovis*.—The Sheep. This useful and gentle animal is a native of the four quarters of the globe. In a wild state it is gregarious, watchful, defenceless, and extremely timid. It inhabits mountainous countries, and, though less active than the goat, climbs rocks and precipices with a facility and speed, when alarmed, which baffle the pursuit of the hunters. The fleece, in the wild state, approaches nearer to hair than wool, or at least the wool is short, and forms the under covering, and is plentifully mixed with long and coarser hair. In a state of domestication the hair gradually disappears, and the fleece becomes all wool.

The sheep has always occupied a prominent place in the human economy, the wool being manufactured into an infinite variety of cloths for garments, and the flesh, nutritious, wholesome, and cheap, is everywhere a popular article of food.

But sheep are sometimes employed for other purposes. In some parts of South America the children use them as ponies, and ride them to school. Major Skinner asserts that in some parts of India they are used as beasts of burden. "I met," he says, "several merchants of the province of Bisehur driving a flock of sheep, bearing loads of from thirty-five to forty pounds

each. The burdens were swung in bags over their backs, without any cords to bind them on, and they moved up the steep crags with the greatest nimbleness and indifference to the weight.

"They are employed for trade, and are made to carry grain from a fertile to a less happy quarter. They travel with surprising quickness, and are kept together without the least trouble. No four-footed animals but goats and sheep could do this service in any part of the mountains; and the former being too apt to roam, perhaps the latter are the only ones that can be safely turned to such account."

O. Musmon. — The Musmon of Corsica. This singular sheep, now become somewhat rare, inhabits the highest peaks of the mountains in Southern Spain, Sardinia, Corsica, European Turkey, and some of the islands of the Archipelago, and in the Isle of Cyprus. The general color of the body is yellowish. The horns of the male are very large and long, bending backward with an arch which constitutes more than half a circle. "The flocks consist sometimes of a hundred or more, governed by some old and courageous male. In a domestic state the young males and females are docile and gentle; but the old males become subject to fits of ill-nature, and sometimes assail children, women, and even men, by butting.

O. Tragelaphus. — The Bearded Argali of Africa. The color of this handsome animal is a fine reddish-yellow. But the most singular character which this species presents is the long hairs which garnish the anterior parts of its body and legs, hanging down as far as the middle of the shank, thus forming a very ornamental appendage. It is one fifth larger than the common sheep. Sometimes this beautiful animal is called the African Mouflon.

O. Montana. — The Argali of America, or Rocky Mountain Sheep. In the Fauna Boreali-Americana of Dr. Richardson we find an excellent description of this animal, a portion of which we subjoin: —

"The Rocky Mountain sheep inhabit the lofty chain of mountains, whence they derive their name, from its northern termination in latitude 68° to about latitude 40° , and most likely still farther south. They also frequent the elevated and craggy ridges, with which the country between the great mountain range and the Pacific is intersected; but they do not appear to have advanced farther to the eastward than the declivity of the Rocky Mountains, nor are they found in any of the hilly tracts near Hudson's Bay. They collect in flocks of from three to thirty, the young rams and the females herding together during the winter and spring, while the old rams form separate flocks, except during the month of December, which is their season of love. The ewes bring forth in June or July, and then retire with their lambs to the most inaccessible heights. In the retired parts

of the mountains, where the hunters had not penetrated, they exhibited the simplicity of character so remarkable in domestic sheep; but where they were often fired at, they were exceedingly wild, alarmed their companions on the approach of danger by a hissing noise, and scaled the rocks with a speed and agility which baffled pursuit. Their favorite feeding-places are grassy knolls, sheltered by craggy rocks, to which they all retreat when pursued by dogs or wolves. They are accustomed to pay daily visits to certain caves in the mountains that are incrusted with a saline efflorescence, of which they are fond. The horns of the old rams attain a size so enormous, and come so much forward and downward, that they effectually prevent the animal from feeding on level grounds. The flesh is quite delicious when in season, far superior to that of any of the deer which frequent the same quarter, and even exceeding in flavor the finest English mutton."

O. Africanus.—The Long-legged Sheep. This African animal is remarkable for the great length of its legs, and of its pendulous ears. The *Persian sheep* appears to be an allied form of the former. It is distinguished for its black head, and docile and amiable disposition.

O. Steatopyga.—The Fat-rumped Sheep. This very curious species is, according to Pallas, raised throughout all the temperate regions of Asia, from the frontiers of Europe to those of China, where the hordes of Kirguize Tartars lead a wandering life, seeking fresh and fitting pastures. The body of this animal towards the posteriors swells gradually with fat; but the characteristic mark is the deposition of a solid mass of fat on the rump, which falls over in the place of a tail, divided into two hemispheres, which take the form of hips, with a little button of a tail in the middle, to be felt with the fingers. The fatty protuberances sometimes become partially loosened from their base, and incommodate the sheep; they weigh from thirty-five to forty pounds.

The Barbary Broad-tailed sheep is evidently an allied species. It is common in South Africa, and must once have been common in Northern Africa and Syria, as it is probably the animal alluded to by Aristotle, when he says, "The sheep in Syria have broad, long tails, which drag on the ground." It is below the middle size. The name is derived from two masses of fat on each side of the inferior part of the tail, which often reach a great weight, and are esteemed as a delicacy. A little carriage with wheels is sometimes attached to bear up the tail and protect it from rubbing on the ground.

In addition to the above foreign species, we may mention the Astracan breed, remarkable for the fine spirally-twisted wool, and the *O. dolichura* of the Russians. This last is a handsome sheep, of a white color. The tail contains twenty vertebrae, and is covered with fine, long wool, which

trails on the ground, so as to efface the prints made by the animal's feet.

Our domestic breeds are, of course, reproductions of the British, with some varieties produced by crossing, especially with the Merino, or *Ovis hispanica*, or a Spanish breed. This sheep is distinguished by bearing wool on the forehead and cheeks. The horns are very large and ponderous, and convoluted laterally. The wool is fine, long, soft, and twisted in spiral ringlets, and, being extremely oily, the dust and other impurities adhere, giving the animal a dingy and unclean appearance, which does not convey an idea of superiority; but when this is removed, the unsullied pureness and fineness of the wool become manifest. Many different breeds exist; but the best is supposed to be those of Cavagne and Negrote. These are kept during the winter in particular districts of milder climate, and are travelled into other districts to be shorn, and again removed to the most favorable grazing stations. The Pyrenean races are rather more hardy, but yield a remarkably fine wool. According to Mr. Young's communication in the Annals of Agriculture, four shepherds, and from four to six large Spanish dogs, have the care of a flock or herd. The head shepherd keeps on the mountain-top, or an elevated spot, where he can better see around, while the flock browses on the declivities. The extreme docility of these sheep is worthy of notice. The shepherd moves among them without in the least disturbing them; and when he wants an individual for any purpose, he has only to speak to it and hold out his hand, and it will follow him wherever he goes.

Spain exports between 9,000,000 and 10,000,000 pounds of Merino wool annually. This sheep, and crosses of the same with other breeds, have become common in the United States, which promises to become the most extensive sheep-producing country in the world. Great Britain has between 32,000,000 and 35,000,000; but the superior climate and pastureage, and greater extent of territory in this country, ought to place us ahead of the world in this branch of agricultural production. The great west can supply wool for every market on earth; but in the eastern and western states the sheep should be cultivated for its flesh. Every farmer should keep a number, according to the extent of his farm; for as the sheep will thrive on the most barren soil, it literally costs nothing to keep, except a little labor, and therefore must be considered the most profitable animal which the agriculturist can rear. To save the labor and space of long specific description, we subjoin a table of the breeds, with the production of each in wool and flesh, at different ages, where the farmer can see at one glance which breed will best suit his own particular wants: —

		Face and Legs.	Wool.	Fleece, lbs.	Quarters, lbs.	Age, yrs.
1. Dishly,	No horns,	White,	Combing,	8	25	2
2. Lincoln,	"	"	"	11	25	3
3. Teeswater,	"	"	"	9	30	2
4. Dartmoor,	"	"	"	9	30	2½
5. Exmoor,	Horned.	"	"	6	16	2½
6. Dorset,	"	"	Carding,	3½	18	3½
7. Hereford,	No horns,	"	Fine,	2	14	4½
8. South Down,	"	Gray,	"	2½	18	2
9. Norfolk,	Horns,	Black,	"	3½	18	3½
10. Heath,	"	"	Coarse comb.,	2	15	4½
11. Herdwick,	No horns,	Speckled,	Carding,	—	10	4½
12. Cheviot,	"	White,	"	3	16	4½
13. Dunfaced,	"	Dun,	"	1½	7	4½
14. Shetland,	"	Colors various,	Fine cottony,	1½	8	4½
15. Romney Marsh,	"	White,	Combing,	8	25	2½
16. Spanish,	Horns,	"	Carding,	3½	—	—

Between *Capra* and *Ovis*, and the *Bovidae*, or ox tribe, there is a series of animals, in some respects partaking of the character of both. Although they have generally been considered in connection with the antelopes, they may very properly be styled the ox-like group.

Acronotus Bubalis.—The Bubalis. This animal inhabits the north of Africa, and is about the size of a stag, but resembling the cow in form. It is of a yellowish-dun color, with the exception of the tail, which is black. The horns are sharp, and turned backward. In defending itself, it places the forehead parallel to the ground, between the fore legs, and in this position either waits for the attack, or rushes upon the assailant, and, at the moment of contact, suddenly raising the head, inflicts terrible wounds of the most dangerous character.

Baselaphus Oreas.—The Impoofo. The impoofo is a native of South Africa, and was formerly very abundant in the Cape Colony. It exhibits a still nearer approach to the bovine form, by its clumsy form, heavy gait, and large, hairy dewlap. According to Lichtenstein, it is from seven to eight feet in length, and about four feet high. They are sometimes found in groups of twenty or thirty, in which there are seldom more than one or two males, which are fattest, and are always singled out for destruction. They run swiftly at first, but are easily run down. Their flesh resembles beef, and is quite as good. Of the hides the natives make leather, and of the horns, tobacco pipes.

Strepsiceros Koodoo.—The Koodoo. We are here introduced to an animal which unites many of the characters of the ox, the sheep, and the antelope. It is about eight feet in length, of a grayish-buff color, with a line of white passing down its back, crossed by six or seven others along the whole body. It inhabits the woody regions of Cafraria, and the Karoo Mountains.

Portax Picta.—The Neel-Ghau. Pennant calls this beautiful and active animal the *white-footed antelope*. It inhabits the jungles and woods of Northern India, and is more numerous on the confines of Persia. The color is a dark-gray. The horns are seven or eight inches long, the curve directed forward. It has a considerable mane, and the breast is ornamented with long, pendulous, black hairs. Mr. Bennet relates that in captivity it is gentle, and licked the hands of those who offered it bread, suffering itself to be played with, with every manifestation of pleasure. When meditating an attack, it falls suddenly on its fore-knees, shuffles onward in that posture until it has advanced to within a few paces of the object of its irritation, and then darts forward with a powerful spring, and deals such tremendous blows with its head, that both horse and rider have been prostrated by the charge.

Catoblepas Gnu.—The Gnu, or Gnu. This singular animal is a native of Central and South Africa, frequenting the deserts beyond the confines of civilization in company with the antelopes, ostriches, quaggas, and zebras. The whole aspect of the head is ox-like. The horns are present in both sexes, and rise "from the frontal ridge, and then bend forward and downward, and then suddenly upward; they are round, nearly smooth," and pointed. Altogether, the gnu is a fierce and mischievous-looking animal; yet it is really sportive in manner, standing still at one time, gazing around, and at the next moment scampering and ambling over the plains with immense rapidity. Its cry is like the bellowing of a bull. There are three species of the gnu: 1. The one under consideration; 2. The *kokoon* (*A. taurina*, Burchell), of a larger size than the gnu, but similar to it in form, and although inhabiting the same localities, never associating with it; and, 3. The *brindled gnu* (*A. goron*, Hamilton Smith), a very distinct species from either of the preceding, but known only by a stuffed specimen in the Museum of the London Missionary Society, which was brought from the countries near the source of the Orange River.

Oribos Moschatus.—The Musk-Ox. The desolate and barren regions of North America, stretching northward from the sixtieth degree of latitude, nature has assigned as the dwelling-place of this animal. A country rocky and barren, and without wood, appears to be its favorite resort, where it feeds on mosses and lichens. It is about the size of a small bullock. The head is large and broad, and is ornamented with heavy horns, which cover the whole crown of the head. The hair is long, matted, and curled, and hangs down to the middle of the leg. The cow is less in size, has smaller horns, and shorter hair on the chest and throat. The general color is brown. The musk-ox is a gregarious animal, and assembles in troops of thirty or forty. The fur-traders, Esquimaux, and other Indians, hunt them

for their hides and flesh. They are of a peaceful disposition, but when molested, will fight with great fierceness and obstinacy.

We now enter on the Bovine, or Ox-family, which includes a number of well-known animals, which do not yield to any tribe of ruminants in the importance and value of their products and general utility to mankind. Among civilized nations the ox and cow have ever held a conspicuous place, their docility, obedience, and patience rendering them universal favorites. The ox submits to the yoke, and gives his service to man—drawing the heavily-loaded wain, or impelling the plough—freely and without complaint, while the cow supplies milk, butter, and cheese,—articles at the same time, of luxury and necessity to both rich and poor. The flesh is considered the most healthful and nutritious of all animal food, and every other part of the beast has an economic use of no mean importance. The ears and other apparently worthless portions are manufactured into glue; the hair gives strength and cohesiveness to the plaster which is spread on the walls of buildings; the horns are transformed into combs; the skins are made into leather of various kinds; the tallow has its various uses; the lining of the intestines produces the gold-beater's skin, and even the blood has its value in the arts, especially in the clarifying of sugar, and the manufacture of Prussian blue. We shall introduce some wild species first, and close with the domestic cattle.

Bos Americanus.—The American Bison, or Buffalo. This powerful and fierce-looking animal is of a liver-color, upwards of six feet high at the shoulders, and often attains the enormous weight of one ton. The head and fore-quarters are large, clothed with long shaggy hair, which, nearly obscuring the small and malicious-looking eyes, gives the beast a very wild and formidable appearance. The horns are small, but strong, set far apart, nearly straight, tapering, and pointed. The flesh is well-flavored, juicy, and much esteemed by hunters and travellers over the prairies. The hump which rises between the shoulders is a mass of fat, and is considered a great delicacy by the Indians. The skins, prepared by a peculiar process, are the buffalo-robies, the comfort of which, all who ride in sleighs, or carriages, in our rigorous winter weather, have had abundant and pleasant experience.

Formerly, the bison roamed through all the forests of North America, reaching as far east as Pennsylvania, and north to the sixty-fourth degree of latitude. The advance of civilization has diminished their numbers, but they are still numerous in the vast unsettled regions of the west and southwest, where they wander over the prairies in countless herds in search of their favorite food, the most attractive of which is the sweet and tender grass that springs up, after a fire has swept over the country, and consumed

the old and dry stubble. We learn from Dr. Richardson's interesting account, that in winter they scrape away the snow with their feet, to reach the grass. The bulls and cows live in separate herds for the greater part of the year; but at all seasons one or two old bulls generally accompany a herd of cows. They are usually extremely shy and watchful, scenting an enemy at a great distance, and immediately taking flight. But when assembled in large herds, they seem to derive courage, and are less wary. They will blindly follow their leaders, and certain destruction awaits the hunters who may be in their way when the frightened and maddened animals rush like a storm across the prairie, which trembles and resounds with the thunder of their tread. It is dangerous for a hunter, on foot, to attack a single individual, as if he only wounds the animal, it will pursue, and be sure to overtake, and seriously wound, if not completely destroy him.

The Indians hunt them on horses, which is a safer recreation, and attended with surer results. They are also taken by being driven into an enclosed, circular space, of about a hundred yards in diameter, called a *pound*.

Bos Cafer. — The African Buffalo. This species is found nowhere but in the tropical parts of Southern Africa, and is very distinct from every other variety of the ox tribe. It is a very ferocious and dangerous animal, its countenance expressing a most savage and malevolent expression. Its horns, though not larger or longer than ordinary, are so broad at their base as to cover the whole forehead, and give to it the appearance of a mass of rock. It is much larger than the ox, and more compact, and strongly made. It is a dangerous animal to attack, but is often killed in pitfalls. Mr. Pringle relates an interesting account of a buffalo hunt, so graphically describing the beast and its ferocity, that we cannot refrain from subjoining it.

"A party of boors had gone out to hunt a herd of buffaloes, which were grazing in a piece of marshy ground, interspersed with groves of yellow wood and mimosa trees. As they could not conveniently get within shot of the game without crossing a part of the marsh, which did not afford a safe passage for horses, they agreed to leave their steeds in charge of their Hottentots, and to advance on foot, thinking that if any of the buffaloes should turn upon them, it would be easy to escape by retreating across the quagmire, which, though passable for man, would not support the weight of a heavy quadruped. They advanced accordingly, and, under covert of the bushes, approached the game with such advantage, that the first volley brought down three of the fattest of the herd, and so severely wounded the next bull-leader, that he dropped on his knees, bellowing furiously. Thinking him mortally wounded, the foremost of the huntsmen issued from the covert, and began reloading his musket as he advanced, to give him a

finishing shot; but no sooner did the infuriated animal see his foe in front of him, than he sprang up, and rushed headlong upon him. The man throwing down his heavy gun, fled towards the quagmire, but the beast was so close upon him that he despaired of escaping in that direction, and turning suddenly round a clump of copse-wood, began to climb an old mimosa tree which stood at the outside of it. The raging animal, however, was too quick for him: bounding forward with a look of the most frightful character, he caught the unfortunate man with his terrible horns, just as he had nearly escaped his reach, and tossed him into the air with such force, that the body fell, dreadfully mangled, into the cleft of the tree. The buffalo ran round the tree once or twice, apparently looking for the man, until, weakened with the loss of blood he again sank on his knees. The rest of the party recovering from their confusion, then came up and despatched him, though too late to save their companion, whose body was hanging in the tree quite dead."

Bos Bubalus. — The Indian Buffalo. Although less in size than our domestic cattle, this animal is far superior in activity, courage, and power. It roams wild in the forests of India, Persia, and North Africa, and is found in the south of Europe. The body is sparsely covered with dark, coarse hair, and the horns are large, bent backward and sideways, with the points turned up. These buffaloes are domesticated, but their indocility and fierceness render them difficult of management, and they are governed by means of a ring fixed in the cartilaginous substance of the nose. They have a treacherous and sinister look, and will often attack strangers without any warning.

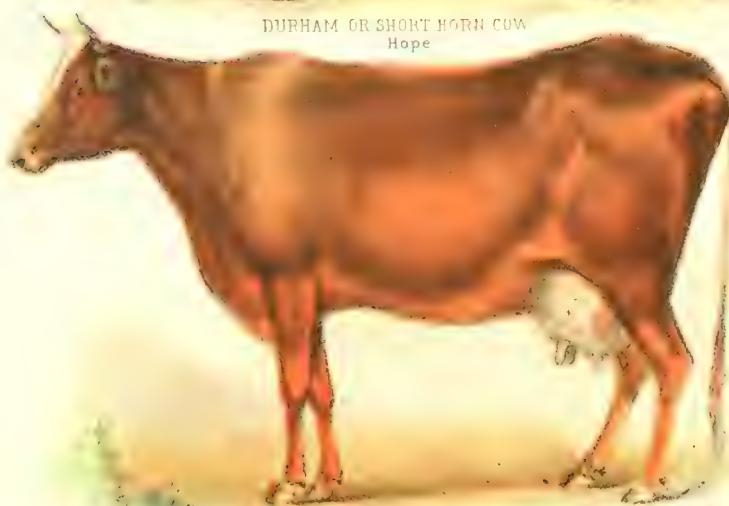
They are fond of water, and take great delight in rolling in the pools and marshes, which are bordered with tall grass, and will remain for a long time, with nothing above the surface but the nose and eyes. The banks of the Ganges, and Cozimbazar Island, are their favorite haunts.

According to the reports of travellers, the Indian buffalo is one of the most formidable beasts of the Oriental forests. A single one will attack a whole herd of elephants, and lesser animals flee in terror before him. Even the mighty tiger, which does not hesitate to assail the elephant, and will not shrink from a contest with the lion, becomes a mere coward in his presence, and, paralyzed by fear, sneaks away to some hiding-place. As soon as the buffalo discovers a tiger, his eyes sparkle with fury, his whole body quivers with rage, and he rushes upon his victim, and gores him, the tiger often opposing but a feeble resistance.

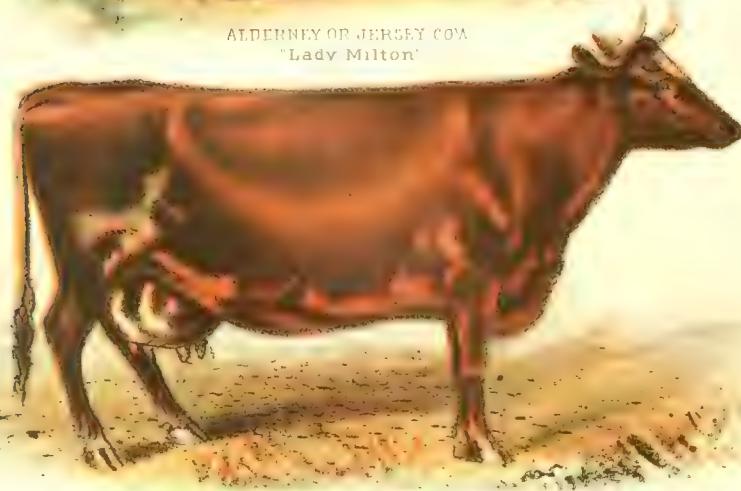
Bos Urus. — The Auroch. Little is known of this species, although it is said to be quite numerous in the forests of Russia, and some parts of Asia, and is sparingly found in the wildest regions of Germany and Poland. The fore parts are covered with a gray or whitish woolly hair, above a foot



DURHAM OR SHORT HORN COW
Hope



ALDERNEY OR JERSEY COW
"Lady Milton"



AYRSHIRE COW "Flora"

in length. The forehead is convex, and the horns are short and pointed. "A remnant of these animals," says Professor Von Jarocki, "is still preserved in a wild state in the forest of Biolowiza in Poland. They live in herds, each family keeping constantly in the same district of forest, near some stream or river. They continue to grow for six years, and may live till forty. At times they are extremely sportive, thrusting their horns into the ground near young trees, and ploughing round till they root them up."

Bos Sylhetanus. *Bison Sylhetanus* of F. Cuvier.—The Sylhet Ox. M. Alfred Duvaneel discovered this animal in the mountains of Sylhet. The hump on the shoulders is a slight fatty eminence, extending to the middle of the back. All this part is covered with a grayish woolly hair, covering the back of the neck and front. These animals never descend to the plains, and delight to range in the thick forests, feeding on the tender shoots, and rarely eating grass. Neither do they affect the water. They soon become domesticated, and their milk is said to be abundant and rich. The Hindoos regard them with great veneration, and employ them in their religious ceremonies.

Bos Grunniens. — The Yak. This animal is found in "the range of mountains which separates Thibet from Bootan, living in the wooded valleys, and often making excursions to the limits of the snow line." The yaks are of various size; some of them have the hump, while others are without it. They are nearly black; but the hair on the tail and hump, and the mane, is quite white. The tails are of extraordinary length, and are composed of a mass of long, fine, and silky hair. They are used by the aristocracy of the east as fly-whippers. The Chinese dye them of a beautiful red, and wear them as tufts to their summer bonnets.

The yak is domesticated, and, being extremely docile and sure-footed, is usefully employed in carrying burdens. It is never used for tillage or draught. Like the buffalo, it is fond of water, especially when it is icy cold, but sometimes continues his ablutions too long, and is caught fast by the frost. M. Hue, in his travels in Tartary, Thibet, and China, while traversing a mountain region in the Isaiden Mongol country, witnessed the strange spectacle of a herd of yaks frozen in the stream which they had attempted to cross. The ice was so transparent that they looked as if still swimming; but the eagles and ravens had picked out their eyes.

Bos Indicus. — The Indian Ox, or Zebu. The Zebu varies in size from a common mastiff to a large bull. The horns are irregular, some having them, others are hornless, while some have horns without any central core, attached only to the skin, and hanging loose. Some varieties have a fatty hump on the shoulders, often weighing fifty pounds, while another variety is furnished with two. They have all the docility and mildness of temper

of our domestic cattle, and are employed in agricultural labors. They are trained also for the saddle and harness, and often travel thirty miles a day.

One of these varieties is the Brahminy, or sacred bull of the Hindoos. Hamilton relates that in many parts of Bengal an absurd custom prevails, which frequently occasions much damage to the farmer. When a rich young man dies, a young bull is consecrated with much solemnity to Siva, and married to four wives, when he is marked and turned loose. As it is unlawful to molest him, he may go where he pleases, destroying with impunity fields of grain, or whatever he may desire.

Having thus noticed the principal wild species of the bovine tribe, we pass to a consideration of our domestic species. The great importance of this class of animals in the economy of civilized people has led to the careful cultivation of a considerable number of *varieties*, each of which is valuable in some special and particular point. In France, according to Desmorest, there are twenty favorite breeds, French and Dutch, differing not materially but in form. Among them are the following:—

Bos Lemovicensis.—While young, these animals are kept in the district of Perigord, and driven to Normandy, to be fattened and prepared for the Parisian market. They are of a pale color, generally white or tawny, strongly formed, with large, bending horns, weighing from six hundred pounds to eight hundred and fifty pounds. The *Bos Aquitanicus*, or Gascon race, feeds to nearly a similar weight, and supplies the French navy with beef. *B. Avernus*, raised on the mountains of Auvergne, is employed at the age of three years for tillage, and afterwards fattened. It is of strong proportions, but does not reach a heavy weight. *B. viducassencis* reaches a large size, with large white, but short horns, blotched with red and white, black and white, or black and red. This breed is considered the finest in France, introduced from Holland, and used for tillage. Another large breed, *B. uneliensis*, when crossed with the last, reaches a weight of thirteen hundred or fourteen hundred pounds, and is the largest in the empire. *B. Helveticus* is one of the Swiss races, celebrated for the quantity of their milk, and *B. Batavius* is the ordinary Dutch breed, famous for a similar good quality.

In Britain more attention has probably been given to cattle-raising than in any other country, and the English stock, therefore, is of a very superior character. There are numerous breeds, the most valued of which are the following: The Short-horned variety, originally from a Dutch stock, is highly esteemed. They feed easily, and reach a heavy weight at a very early age. Their abundant milk furnishes the Yorkshire firkin butter of

the London market. The Middle-horned cattle are greatly prized for the quantity and quality of their milk, and also their adaptation to farm labors. The Welsh cattle are easily and quickly fattened. The Suffolk duns are a small breed, without horns, but excellent for the dairy. The Alderney race is a finely-formed and handsome breed of cattle, kept for the richness of their milk. They are less hardy than the others, more impatient of the cold, and require more care. The Galloway polled breed is a hardy race, without horns, and celebrated for the superior quality of their beef, which commands the highest price in the London market. The Kyloe, or Highland cattle, are wild-looking, shaggy animals, of a black color. They quickly fatten, and afford rich and excellent beef. London alone consumes nearly a million and a half of these Highland beeves annually.

In the United States the domestic cattle are, for the most part, the offspring of the British races just referred to. For some years past much attention has been given to the cultivation and improvement of breeds, and many parts of the country can boast of some very fine stock; but this great agricultural interest is not yet fully appreciated here. The Durham and Holstein breeds are much prized for beef and working oxen, and the Jersey and Ayrshire for the superior quality of their milk.

Milk itself is an article almost of supreme necessity. We might do without beef, but what would the tables, both of rich and poor, be without milk? Butter, cheese, cream, milk, and bread form more than half of our living. In a report on the Ayrshire cow, made to the Worcester Agricultural Society, by L. W. Curtis, Esq., that gentleman justly and eloquently remarks, "It is conceded that the cow affords more luxury to man than he derives from any other source. Without her, berries and milk, strawberries and cream, fine cheese, and the golden butter, would never grace our tables. Without butter our beefsteak would be indififerent, our vegetables unpalatable, our toast tasteless, and our bread unbuttered we should hardly think fit to eat. Then if milk and its products are the luxuries of man, the great question arises, How can this be produced in the greatest quantities, and still be rich in quality?

"Within the past fifty years great progress has been made in perfecting the good qualities of the cow. Then, one that would give ten hundred quarts in a year would be a fair cow. Even now, nine tenths of the cows in the rural districts do not average more than fifteen hundred quarts in a year; but these are not profitable to the farmers. We should not be satisfied with less than three thousand. This may look large; but we have cows that have given a thousand quarts in thirty days, and probably give nearer five thousand than three thousand in a year. Youatt estimates the annual yield of an Ayrshire cow at thirty-four hundred quarts; Aiton sets it much

higher, and says that thousands of Ayrshire cows give four thousand annually, beer measure. It is conceded by all farmers who have had any experience in the different breeds, that an Ayrshire cow generally gives a greater return in milk for the food consumed than any other breed of cows. We will now make a few figures on profit and loss. A cow that gives only fifteen hundred quarts a year, will, at five cents a quart, yield an income of seventy-five dollars, which will leave but little profit after taking out the keeping. The one that gives three thousand yields an income of one hundred and fifty dollars, while one that gives four thousand yields an income of two hundred dollars, or a net profit of one hundred and twenty-five dollars over the first. But allowing that we give this one twenty-five dollars' worth of extra feed, then we have one hundred dollars left, and a profit of twelve hundred dollars on a dairy of twelve cows,—an item which would satisfy any of our farmers.

"The question now comes, How shall we obtain such cows? It is conceded by breeders that a cross of native cows with an Ayrshire bull produces nearly as good milkers as full-bloods. Then all you have to do is to select the best cow you have, and put her to a full-blood Ayrshire bull; and if she has a heifer calf, with a small and long head, eyes not large, but dark and lively; neck long and slender, tapering towards the head; shoulders and fore quarters light and thin; hind quarters large and broad, with skin loose, thin, and soft, raise it; but if it has not most of these points, reject it and try again, and in a few years you will have a dairy that you will be proud of, besides giving you a well-filled purse. To succeed well, there are two things more which should have been included, viz., proper care and feed. By proper care, I have reference to the habit farmers have in letting their cows be out in cold, windy, or stormy days. I have seen cows stand all day in a March wind without any protection. Let a man stand there so many hours and it would unfit him for labor for a week. In relation to feed, farmers often turn their cows out on a frosty morning to eat frozen grass, or eat old fog, and, so long as this bloats them up and makes them look full, they think they have feed enough. Cows should never be turned out on a frosty morning, but should be fed in the barn; and whether cold or hot, after the grass has been spoiled by frost, they should be fed daily in the barn and kept up all cold days, and thus keep up their health and flesh, otherwise they will soon lose all they have gained during the summer."

The animals of the group which we have now been considering are noted for their gentleness and great amiability of disposition, which, together with their great utility, should secure them kind and gentle treatment and benevolent care from their masters; yet we are sorry to say that this is not always,

nor so frequently the case, as could be desired. We have often seen the poor ox, when doing his best to move an over-laden wagon, goaded, kicked, and beaten with clubs in a most inhuman and barbarous manner. Passing one day by the farm of a clergyman, not far from our residence, at that time in eastern Massachusetts, our attention was arrested by a profusion of horrible oaths, and the sound of heavy blows, in a neighboring field. Approaching the wall, and looking over, what was our surprise to see the clergyman in a state of perfect fury, with red and swollen face, and blood-shot eyes, beating a pair of oxen over the head with a heavy club, and swearing at them in the most profane manner. The abused animals bore all patiently, only turning their large, expressive eyes upon their persecutor as if in mild reproach. We ventured to expostulate; but we might as well have expostulated with a tornado; and turned away with the conviction that those poor, ill-treated, uncomplaining brutes were more worthy of immortality and the rewards of paradise, promised to the persecuted and heavy-laden, than that minister of religion, who had suffered a devilish passion to sink him far below the most degraded of "the beasts that perish." Such scenes are always very painful to right-minded people, and we have often desired that the laws enacted to prevent cruelty to animals might be more vigorously and faithfully enforced, and the societies for the prevention of such outrages more vigilantly and efficiently discharge their duties.

ORDER IX.—THE EDENTATA.

This order derives its name from the absence of the front teeth. It embraces the Sloths, Ant-eaters, Armadillos, and the Manis, all of which have large, hoof-like claws, or organizations ill-adapted to locomotion, and, as a consequence are of inactive dispositions. Except to the man of science they are not a very interesting class of animals. They are represented by several genera, which we will now briefly introduce.

Genus *BRADYPOUS*.—The Sloths. They have, as has been said, no front teeth, but are supplied with cylindrical molars and pointed canines; their arms are extremely long, and hind legs short, as is also the face. There are several species, which differ little in color and other characters and habits. The *B. tridactylus*, the three-toed, and *B. didactylus*, the two-toed sloth, are best known. They are arboreal, living for the most part on trees, and will not leave one until its verdure is completely devoured, when, urged by hunger, the sloth will work his slow, and apparently painful way, to another.

Genus *DASYPUS*.—The Armadillos. These animals are noted for a strong, and bony covering, which clothes the upper part of the head, the

entire back and tail, and which constitutes their defensive armor. When attacked, the armadillo will roll itself into a ball, thus presenting to its foe nothing but an invulnerable surface of bone, and often, if on the summit of a hill, will, in this position, bowl itself down the declivity with considerable rapidity. They are of various length. One described by Mr. Schomburgh was three feet high, and five and a half feet long. The tail was sixteen inches in length, and at the root as thick as a man's thigh; the middle toe of the five on the fore feet was seven and a half inches long, furnished with claws capable of rapid digging. They are very fond of putrid flesh, and it is said will dig into graves. There are several species — the *Das. tricinctus*, or three-banded armadillo; the *Das. sexcinctus*, six-banded; *Das. septemcinctus*, seven-banded; *Das. norencinctus*, nine-banded; *Das. unicinctus*, twelve-banded; *Das. octo-deciminctus*, the eighteen-banded; and *Das. gigas*, or giant armadillo. This last weighs about seventy pounds, has a long, tuberculous tail, and is armed with very large, strong, sharp claws.

Genus *CILAMYPHORUS*. There is but one species, a small animal of Chili.

Genus *MYRMECOPHAGA*. — The Ant-eaters. These all belong to tropical America. They are hard-skinned, hairy animals, with lengthened forms, long, tapering head and snout, and extensile tongues. Their long, cutting claws serve as a defence, and also enable them to rend to pieces the nests and hills of the ants on which they feed, and which they draw forth and carry to the mouth with their long tongues. They are entirely toothless. The smaller species have prehensile tails, and "bearing only one young, are in the habit of carrying it on their own backs."

Myrm. Jubata. — The Great Ant-eater. This is a powerful animal, about five feet in length, with four toes on the fore, and five on the hind feet. The hair is long, of a grayish color, with a wide, black band, edged with white, passing obliquely from the breast upon the shoulder. The most remarkable appendage is the tail, which is long and brushy, and capable of being spread out, like an umbrella, over the whole body, in which position it often carries it. This animal, powerfully armed with long, trenchant claws, has few enemies to fear in the South American forests. Even the fierce jaguar hesitates to attack it, and when he does, the contest is terrible, and the victory doubtful, as the jaguar is liable to have his bowels torn open by a blow of the ant-eater's foot.

Myrm. Tetradactyla. — The Three-toed Ant-eater. This is a much smaller animal, dwells in trees, and appears to vary in color, from sooty black to a dull white.

Genus *MANIS*. — The Manis. These are long, slender, long-tailed animals, destitute of teeth, and covered with several rows of broad, horny

scales, which they raise when rolled up for their defence. They inhabit Africa, South-eastern Asia, and the Australasian Islands. There are other species, but they possess no characters or habits essentially differing from the above.

ORDER X.—THE RODENTIA.

This order derives its name from the well-known *gnawing* habits of the animals of which it is composed. The peculiar structure of the teeth renders this practice necessary to the existence of the animal; for the incisors, of which there are two in each jaw, continually and rapidly grow from the base, and if they are not worn down by perpetual gnawing, they become so long that they cannot act upon each other, and the creature dies for want of food.

The Rodentia are, for the most part, lively and interesting animals, many of them extremely active, and such as are furnished with perfect clavicles, use their fore feet as hands, to raise objects and convey food to the mouth. They are divided into several families. The Sciuridae, or squirrels; Muridae, or rats and mice; Castoridae, or beavers; Leporidae, or hares and rabbits; Hystricina, or porcupines, and some others.

Genus *SCIURUS*.—The Squirrel. The animals of this group are furnished with perfect clavicles; have five grinders above and four below on each side; the incisors above are chisel-shaped, and those below are pointed; the tail is long, bushy, with the hairs directed laterally.

S. Vulgaris.—The Common Red Squirrel. This beautiful and sprightly little quadruped is too well known to need description. Its length, including the tail, is about fifteen inches. The female is somewhat smaller, and of a lighter color. The squirrel appears to be endowed with considerable intelligence, which is manifested by the manner in which it procures some portions of its food. It lays up a stock of provisions, chiefly nuts, for winter use, and in gathering nuts of the larger kind, like the chestnut, which is enclosed in a heavy burr, it ascends the tree, and skilfully cuts off the nut-stocks, when the fruit falls to the ground, and after a sufficient number has been thrown down, it rapidly descends, and, with its powerful incisors quickly removes the nut from the burr, and hastens to carry the produce of its labor to a secure hiding-place.

The squirrel may be easily tamed, and we have had individuals become so familiar that they would climb to our knees and shoulders, and seem to take pleasure in receiving food from our hand. Although in the coldest weather the animal spends some days in a semi-torpid state, in its nest, the first relaxation of the cold will bring it forth again to ramble along the fences, or

gambol among the trees; and we have often seen it in midwinter skipping along the stone walls, stopping frequently, according to its habit, to gaze around, as if taking a survey of surrounding objects.

While eating, the squirrel sits on its haunches, with its tail elevated, holding the nut between its paws, and, skillfully opening the shell, removes the outer pellicle from the kernel before eating it. It is an agreeable sight to observe it in its excursions on the trees, leaping from branch to branch with extraordinary agility, and when disturbed, scampering away with surprising speed. The female produces three or four young ones about mid-summer, which are protected by a nest formed of moss, fibrous roots, grass, and leaves, curiously interwoven, and placed in a hole, or in the fork between too large branches.

The red squirrel is common to the northern hemisphere and both continents. The gray squirrel, somewhat larger than the red, but of similar habits and disposition, and the flying squirrel, are among the most common inhabitants of our forests, and consequently familiar objects to most of our readers. Of the squirrel proper, there are twenty species in the United States; five in Europe and Northern Asia; five in Africa; in the Indian Islands, twenty-five; South America and West Indies, five. To the family of the Sciuride belong also the genera *Tamias*, *Xerus*, *Spermophilus*, *Arctomys*, and *Aplodontia*. Our space will permit us to notice but one or two: The *Spermophilus*, or marmots, with cheek pouches, and *Arctomys*, without cheek pouches. The former are solitary animals, living singly, or perhaps in pairs, while the latter are social, and live in societies.

ARCTOMYS.—Marmots, without Check Pouches. The members of this family have the head and eyes of large dimensions, but the ears small; the feet are very strong, with five toes on the hind ones, and four, with a rudimentary thumb, on the fore. The claws are very stout, and well adapted for digging, and the fore paws can be brought to the mouth.

Like the rest of the order, they are without canine teeth, and in the sharpness of the incisors of the lower jaw they bear some resemblance to the great family of rats and mice, of which perhaps they may be considered as a subdivision, though in some respects they bear a resemblance to the squirrels, and their external forms, and also their manners, are peculiar. They have five grinders on each side in the upper jaw, and four in the under, the summits of which have sharp tubercles, so that they seem capable of subsisting on insects, and even on the flesh of larger animals, as well as on vegetables. Their bodies are thick and clumsy, their legs short and thick, their head large and flat, their ears short and blunted, and their tail short, and apparently incapable of motion.

Some of them inhabit the most bleak and dreary situations, the summits

of the most elevated mountains, such as the Alps, and near the margin of the region of perpetual snow. The chief food of these is no doubt the hard Alpine grasses, and other plants which are found in regions of so scanty vegetation; and these are found only for a part of the year, not more than half of it in the more elevated haunts of the animals. But in their habits they are as seasonal as the places where they reside; for, when the cold weather sets in, they descend into the depths of their burrows, and there remain in a dormant or hibernating state during the whole of the inclement season. Thus their years of activity are reduced to half years, and during these they are very slow in their motions, and at no time is there such action in their system as to occasion that waste and necessity for food which take place in more active animals. Accordingly, barren as their pastures comparatively are, they get very fat towards autumn, and are covered with lard like little pigs, or perhaps rather stored with grease like bears, when they retire to their winter domiciles. Their hibernation, which is not, even in the greatest depth of its quietude, a total cessation of all the animal functions, is gradual at its commencement, and the recovery from it is also gradual. Owing to these circumstances, the fat is wholly absorbed by the time the animals are able to come abroad; and in the brief space of their short year they have to recover their strength, rear their broods, and again become fat, preparatory to a new hibernation.

At all seasons they are ground animals, and spend the whole of their time, except what is taken up in feeding, in their burrows, which they dig with great ease and rapidity, and to a considerable depth, always sloping downwards, so that the dwelling may be beyond the reach of the intense cold of the winter, and yet so contrived as to be in no danger of filling with water during the rains or the melting of the snow.

Some of them are animals of considerable size, not less than the common wild rabbit. But though easily taken, as their progressive motion is slow, and it is not very difficult to dig them out of their burrows, they are of little value to mankind as game.

In countries where rhubarb plants are found, the marmots are said usually to fix their residence near them; and, if ten or twenty of those plants are growing adjacent to each other, several burrows are always found immediately under the shade of the leaves. Every animal has its own favorite vegetable.

But the marmots find a more congenial home on the vast prairies which stretch away towards the setting sun, west of the Mississippi. The mild climate and soft, loamy soil seem to be adapted to their nature and peculiar habits, and here they organize their societies and construct their villages. These are very numerous, and variable in extent; in some places covering

only a few acres, and in others spreading over the country for miles together. They are composed of slightly elevated mounds, having the form of a truncated cone, about two feet in width at the base, and seldom rising as high as eighteen inches above the surface of the soil. The entrance is placed either at the top or on the side, and the whole mound is beaten down externally, especially at the summit, resembling a much used foot-path. From the entrance the passage into the mound descends vertically for one or two feet, and is thence continued obliquely downwards, until it terminates in an apartment, within which the industrious marmot constructs, on the approach of the cold season, a comfortable dormitory for his winter's sleep. This room is composed of fine grass, and is globular in form, with an opening at the top capable of admitting the finger, and the whole is so firmly compacted that it might, without injury, be rolled over the floor.

The prairie marmots are represented as being so gentle and sociable, that a species of owl, it is said, takes up its abode in their burrows, and dwells with them in the most friendly manner.

A traveller in the west relates, that "it is delightful, during fine weather, to see these lively little creatures sporting about the entrance of their burrows, which are always kept in the neatest repair, and often inhabited by several individuals. When alarmed, they immediately take refuge in their subterranean chambers; or, if the dreaded danger be not immediately impending, they stand near the brink of the entrance, bravely barking, and flourishing their tails, or else sit erect to reconnoitre the movements of the enemy."

Genus *MYOXUS*.—The generic characters are perfect clavicles, grinders, four above, and the same number below in each side, tail long, covered with rather long hairs, directed laterally.

My. Avellunarius.—Common Dormouse. The length of this handsome looking little animal is about five inches. The general color is light yellowish-red, gradually becoming paler beneath; the fore part of the neck nearly white, the tail dull-red. In classifying this animal, some authors, with Linnaeus, place it with the mice; while others have recorded it as a species of squirrel. It is, however, unquestionably a connecting link between those groups. The tail is less bushy than that of the squirrel, and the hind legs elongated.

In its habits the dormouse also resembles the squirrel, inasmuch as it climbs with facility, and exhibits great liveliness and agility; but it is also allied to the mice, and passes a great part of its time on the ground, feeding on grass, corn, and various small fruits. It resides in thickets, generally remote from human habitations, placing its nest in bushes, and forming it of grass and leaves, intricately interlaced, and disposed in a roundish form,

with a narrow aperture at the top. Having laid up a store of food, and, like other hibernating animals, having become very fat towards the end of autumn, it betakes itself to its retreat, and rolling itself up into a ball, falls into a state of torpidity, from which it is now and then aroused by an unusually mild day, when it partakes of its provision, and relapses into its usual condition. The young are of a brownish-gray color, four or five in number. In the third volume of the Naturalist, at page 104, Mr. Salmon gives the following account of an individual which he happened to capture on the 16th December, 1837:—

“ As I was pushing my way amongst the briars and brambles, I chanced to stumble upon an interesting incident, in the shape of a little ball of grass, curiously interwoven, lying on the ground. It was about eight inches in circumference, and on taking it up I soon ascertained, by the faint sound emitted from the interior on my handling it, that it contained a prisoner. I bore my prize homeward for examination, and on making a slight opening, immediately issued forth one of those beautiful little creatures, the dormouse. The heat of my hand, and the warmth of the room, had completely revived it from its torpor. It appeared to enjoy its transition by nimbly sealing every part of the furniture in all directions. It experienced no difficulty in either ascending or descending the polished backs of the chairs, and when I attempted to secure it, it leaped from chair to chair with astonishing agility for so small a creature. On taking it into my hand, it showed not the least disposition to resent the liberty, but, on the contrary, it was very docile. On being set at liberty, it sprang at least two yards on to a table. I was much gratified on witnessing its sprightly movements. In the evening I placed my little stranger, with its original domicile, in a box, of which, on the following morning, I found it had taken possession, and again relapsed into a state of torpidity, in which condition I transferred my unconscious sleeper to a friend.”

Genus *Mus*.—Rats and Mice. The generic characters are, perfect clavicles, three grinders below on each side, and the same above. Upper incisors chisel-shaped; lower, compressed and pointed; tail long, tapering, annulated with scales, and quite bare.

Mus Rattus—The Black Rat. This species is grayish-black above, and blackish-gray beneath. The ears are about half the length of the head, the tail is rather longer than the united lengths of head and body. This rat was once very abundant both in this country and England, but owing to causes not clearly ascertained, it has become quite scarce. Some naturalists, however, hold the opinion that it has been destroyed by the more powerful and ferocious brown rat. The well known character of the latter for audacity, savageness, and a carnivorous taste, together with its superior strength, renders the opinion not unreasonable.

The black rat is an active, lively, most cleanly, and beautiful little quadruped. Its elongated muzzle, however, and its bare, rope-like, scaly tail, detract from its beauty. It is naturally phytophagous, feeding chiefly on herbs and seeds, but in consequence of its preferring the vicinity of man, it finds it necessary to adopt an extended regimen, and convert into chyle whatever esculents come in its way, so that it is scarcely less omnivorous than its unwilling patron. Unless in places where it is not liable to molestation, it feeds by night, remaining concealed by day in its burrows or ruins. It produces six or eight at a birth, and litters several times in the year, depositing its blind and naked young in a nest composed of dry grass, or any soft materials easily produced.

It is believed to have been originally imported from the continent into England, where it first made its appearance in the beginning of the sixteenth century, and is supposed to have come from the east. Vessels in port were formerly liable to be infested by it, so that it soon became as common in America as in Europe; although in the maritime parts of this country it has now become nearly as scarce as in Europe, and probably from the same cause—the predominance of the more enterprising and stronger brown rat. "In feeding, this species holds the object, if small, between its fore feet, sits on its haunches, with the body bent forward, and the back arched, while its tail is curved along the ground. It runs with great agility, and exhibits much liveliness in its actions. It is remarkably cleanly, taking care to remove whatever may happen to adhere to its fur, feet, or head; and, although occasionally quarrelsome, it for the most part lives a peaceful life in its own community. In affectionate concern for its young, it is not surpassed by any other animal; and were it not an unwelcome guest in our dwellings and stores, but confined itself to the woods and pastures, we should place it among the most interesting of our quadrupeds. Its voracity, however, the ravages it makes among our corn and provisions, and its prolificacy, render it hateful."

Mus Decumanus.—The Brown Rat. This is the unwelcome animal that infests our dwellings, gnawing its way through floors, doors, and boxes in search of food, and often gnawing, and occasioning great annoyance thereby, merely from the simple pleasure of gnawing, or, it may be, from the necessity of keeping its teeth worn down. The native region of this rat is not certainly known. It is now numerous in all maritime countries. It is the largest species of the genus, being often nineteen inches in length, including the tail. The ears are about a third of the length of the head, and the tail is proportionally shorter than that of the black rat. Its color is grayish-brown above, and grayish-white beneath.

It resembles the former species in form and habits. It dwells in drains

and sewers, in the walls of houses and other buildings, makes excavations into cellars, frequents wharves and piles of wood, and, in fact, no place, apparently, is secure from its invasion, and no object safe from its destructive propensities. "In the poultry-yard it sometimes destroys the young chickens, and sucks the eggs; and instances are known of its mutilating infants, and even of attacking grown persons, and when hard pushed it will sometimes turn on a dog or cat, and defend itself with great vigor. Its food consists of almost every kind of animal and vegetable substance eaten by other quadrupeds. In granaries it is extremely destructive, and in houses, where it effects an entrance, it wastes and destroys all kinds of provisions which are exposed to its ravages. To compensate the effects of its destructive habits, the rat possesses no quality rendering it in any degree useful to man. It is, therefore, everywhere proscribed, and various expedients are used for its destruction. It is poisoned and trapped, and hunted by cats and dogs, and yet in spite of every effort to extirpate it, it not only maintains its footing, but appears to be yearly increasing; for its sagacity is great, and the cunning which it employs to elude its enemies often preserves it from destruction.

Mus Musculus. — The Mice. The mouse, so far as form is concerned, may be considered a small rat, as its specific name indicates. There is considerable variety in the colors, some being of a very dark brown, others lighter, and others still with a sprinkling of white hairs. Albinoes of pure white, with pink eyes, are often met with, and are kept frequently as pets. Were it not for its ravages in the house, the granary, and field, the domestic mouse would be a universal favorite; and, in spite of these, we must concede to it an exceeding beauty of form, and activity extremely pleasant to observe, and manners of the most interesting character. The rapidity of its movements, darting hither and thither in quest of food, surpasses the quickest flash of the eye. This lightning swiftness, which makes it wearisome for the eye to follow, is beautifully referred to by Tennyson, in that pleasant little poem, entitled the "Skipping-rope," —

"Her feet, beneath her petticoat,
Like little mice, ran in and out."

We have often seen a half dozen of these little creatures darting round our table, where we were writing at midnight, having learned that we intended them no harm. They were regular in their nightly visits, now running between our feet, and now gliding over the floor, picking up here and there little fragments, when they would sink back on their haunches, and lifting the savory crumbs with the fore feet, sit and nibble away without fear of danger, sometimes pausing to cast up a momentary glance, perhaps of gratitude to their benefactor.

But interesting as these animals are, their extraordinary fecundity and ravaging habits render them naturally objects of persecution, and carts, poison, and traps are employed to encompass their destruction. The mice also have natural enemies, which help to diminish their numbers, as the owls, hawks, and weasels.

The domestic mouse belongs to all parts of the world, but appears to be entirely dependent on man, as it never occurs far from human habitations.

Mus Sylvaticus. — The Wood Mouse. In form this species resembles the former, but has a longer tail and livelier colors, being reddish-brown above, and grayish-white beneath, with a light yellowish-red spot on the breast. It is of pleasing aspect, and easily tamed. It is extremely prolific, and is very injurious to cornfields and gardens. It is fond of seeds of all kinds, nuts, acorns, and insects, and lays up a winter store in its holes, which it constructs in banks, under the roots of trees, and in the fields.

Mus Messorius. — The Harvest Mouse. This is a very small species, and not less attractive in form and appearance than the foregoing. The upper parts of the body are reddish-brown, the lower, white. It dwells in the fields, and has habits very similar to the last.

The family of the Muridae, or rats, is very extensive. It embraces the genus *Dipus*, twelve species; *Merionis*, two species, including the jerboas, or jumping mice of Africa, Asia, and America, two specimens of which are well known, and the *Helamys* of the Cape of Good Hope. Of the rats and mice proper, there are near a hundred species.

Genus *ARVICOLA*. — The Voles. Clavicles perfect; grinders, three above and three below on each side; incisors very long, muzzle obtuse, tail shorter than the body, round, and annulated with scales, but hairy. They resemble the rats.

A. Amphibius. — The Water Vole, or Water Rat. This species is about twelve inches in length, including the tail. Its color is reddish-brown, sprinkled with dark-brown hairs above, and pale yellowish-brown beneath. It does not seek human dwelling-places, but delights in the banks of rivers, brooks, mill-dams, canals, and ponds, where it forms its burrows with great skill. It is fond of the water, swimming and diving with ease. Its burrow has two entrances, one above and the other beneath the water, the latter of which is intended as a means of access or retreat in case of danger. "In fine weather it may be seen, especially in the morning and evening, sitting at the mouth of its hole, nibbling the grass or roots there, but in the middle of the day it usually remains under ground. It feeds entirely on vegetables, chiefly roots, which it stores away for winter use. Five or six young are produced early in summer, and deposited in a nest composed of dried grass, and other like substances.

A. Agrestis. — The Field Vole. The length of this species, including the tail, is about five inches. The upper parts of the body are reddish-brown, sides lighter; the lower parts are yellowish-gray. It inhabits low and wet pasture-lands and the banks of streams, feeding on grass, and roots, and insects. In the autumn it visits fields of grain and corn, and sometimes does much injury.

A. Pratensis. — The Meadow Vole. This species is smaller than the field vole, but resembles it in form. The color above is bright red, yellowish-gray on the sides, and cream color beneath. In habits it is like the preceding.

Of the voles there are nearly fifty species, among which are two of imperfect vision, called *blind rats*.

Genus CASTOR. — The Beaver. For intelligence, social instincts, reflective powers, and a certain degree of moral sense, this animal has long been renowned. It is a bulky and strongly built creature, remarkable for the great strength and sharpness of its incisive teeth, with which it fells large trees, and its broad, powerful, and trowel-like tail. There are two species, one of North America, the other of Europe, limited chiefly to Poland, and known under the title of *Bobr*. It is said the European species does not build, and we believe no author has satisfactorily explained this non-compliance with the constructive instinct of the genus.

In all the Northern States of the American Union the beaver was formerly common, and the ruins of his dams and dwellings are often met with, even now, on the banks of rivers and brooks. In proportion, however, as civilization encroaches on the wilderness the beaver naturally recedes, and, consequently, is rarely found to-day in the older states. But on the northern borders of the North-western States, through the entire of Canada, and northern Asia, the industrious and sagacious beaver still plies his architectural trade, and establishes his commonwealth. A discriminating observer says that beavers begin to assemble in the months of June and July. The country is previously surveyed, and a favorable site chosen for their operations, usually beside a river or brook where the waters alternately rise and fall. "Here they throw up a bank, and thus construct a reservoir, which uniformly remains at the same height. This bank, which resembles a sluice, and is frequently from eighty to one hundred feet in length, by ten or twelve wide at the base, is even more astonishing with regard to its solidity than its magnitude. For the purpose of constructing it, they select a shallow part of the brook or river; and if they find on the margin a large tree, so situated as readily to fall into the water, they begin to cut it down, their fore teeth answering the purpose of a wood-cutter's hatchet; and they begin the work of felling at a foot and a half above the ground. While thus employed, the

laborers assume a sitting posture. Independent of the convenience of this position, they enjoy the pleasure of gnawing the bark and wood, which is grateful to their taste, and which they prefer to any other diet.

"While some of the most able are employed in felling large timber, others traverse the banks, and cut down the smaller trees, then dress, and shorten them to a convenient length, drag them to the margin of the river, and convey them by water to the place where the building is carrying on. And here it is worthy of observation, that these trees are uniformly of a light and tender kind. One will never see a beaver attack the solid and more heavy timber. Their great object is to select such as may be easily barked, cut down, and transported; and hence they prefer the alder, willow, or poplar, which grow beside the margin of their favorite rivers. They sink stakes into the water, and interweave the branches with similar stakes—an operation which implies the surmounting of many difficulties; for, in order to dress the stakes, and to place them at first in a situation nearly perpendicular, some of the laborers must stand upon the river bank, and hold the stakes with their teeth, while others plunge into the water, and dig holes in the bed of the river, to receive the points, in order to place them erect.

"This dam is their great work. The next care is to construct their dwellings. These are uniformly erected upon piles, near the margin of the pond, and have two openings, one facing the land, another the water. They are either round or oval, varying from five to eight or ten feet in diameter. Some consist of three or four stories, with walls of two feet thickness, and are raised perpendicularly on planks, or stakes, which answer the double purpose of floors and foundations; others consist only of one story, and then the walls are low in proportion, curved at the base, and terminating in a dome or vault. But however varying in height, they are uniformly of such solidity, and so neatly plastered both within and without, that they are impenetrable by the rain, and resist the most impetuous winds. The partitions, too, are covered with a kind of stucco, as well executed as if by the hand of man, their tail serving them for trowels, their feet for plastering. In the construction of these buildings various materials are used—wood, stone, and a kind of sandy earth, not easily acted on by water. When finished, they resemble the kraal of a Hottentot, and are carpeted with verdure, or branches of the box and fir. The opening that faces the water answers the purpose of both a balcony and baths; for here they bathe, enjoy the summer breezes, and delight to spend their leisure hours, sitting half sunk in the water, and looking complacently over the open country. This window is constructed with the utmost care; the aperture is sufficiently raised to prevent it from being stopped up by the ice, which, in the beaver's climate, is often two or three feet thick. Should this occur, the busy masons

set to work, slope the sill of the window, cut obliquely the stakes which support it, and thus open a communication with the unfrozen water. This element is so necessary, or rather so agreeable, that even a temporary privation appears to distress them.

"During the summer months, they sedulously employ themselves in collecting an ample store of wood and bark, for winter provender. Each cabin has its magazine, proportioned to the number of inhabitants; this they share in common, and never pillage their neighbors. Some villages consist of twenty or thirty cabins. But such establishments are rare, and, generally speaking, the little republic seldom exceeds ten or twelve families, of which each has its own quarter of the village, its magazine, and separate habitation. The smaller cabins contain from two to six, the larger from eighteen to twenty, and even thirty beavers. But as the parties are generally paired, it is calculated that each society consists of one hundred and fifty or two hundred, who at first labor jointly in raising the great public building, and afterwards, in select tribes or companies, to construct particular habitations. In this society, however numerous, universal peace is maintained. Their union is cemented by common labors, and rendered perpetual by mutual convenience. Moderate desires, with simple tastes, and aversion to blood and carnage, render them insensible to the allurements of war and rapine. They enjoy every possible good, while worldly men only pant after happiness. Friends to each other, they coalesce for mutual protection; and if they have any enemies, they know how to avoid them. When danger approaches, they apprise one another by striking their tails on the surface of the water, the noise of which is heard at a considerable distance, and resounds throughout their numerous habitations. In a moment they are gone. Some plunge into the lake, others intrench themselves within their walls, which can be penetrated only by the fire of heaven or the arms of men, and which no animal attempts either to open or overcome."

Linnaeus describes an animal which he calls the *solitary beaver*. It lives alone, never venturing to approach the regular beaver settlement; and, instead of the neat and comfortable dwelling of his social relative, hides himself in a dirty hole, and spends his days in comfortless solitude. Unclean and stupid, and destitute of all the superior beaver virtues, Linnaeus conjectures that he is a criminal—an outcast from his tribe; judicially condemned to banishment for some violation of the laws of his commonwealth. It may be so; for there is reason to believe that some animals do visit the offences of their members with penalties of more or less severity.

The beaver is hunted for his valuable fur, and large quantities of skins are sent annually from British America to New York, and other large commercial cities of the Union.

Genus *FIBER*. — This small genus comprises but one species, and is of amphibious and partially nocturnal habits. It is placed by Colonel Hamilton Smith next to the beaver in the division of the Arvicolidae. It is distinguished for its strong, musky odor.

F. Zebethicus. — The Muskrat. This species was formerly very abundant throughout the whole of North America. It is of a brown color, darker in winter, with a predominant gray hue; has a long compressed tail, and is nearly three times the size of the common rat, which it resembles in form. Although it retires as human industry and enterprise clear away the forests, and cover the banks of the rivers and streams with mills and manufactories, it may still be found in considerable numbers in many parts of the country which, thus far, have been left undisturbed. In the early morning and the evening twilight we have often seen it pursuing its avocations, and sporting itself in the sequestered streams of Maine, and also in some of the more retired parts of Massachusetts. In the Middle and Western States it is still sufficiently numerous to be an object of eager pursuit to those who are engaged in the fur trade. It feeds on certain kinds of grasses, aquatic roots, such as the flag and lily; and when it has a taste for animal food, it will not disdain a fish, and is skilful in seizing and dressing for its use several kinds of crustacea. Its houses are curious specimens of architecture. They are built on, or rather under, the banks of streams or ponds, and generally have two or three entrances, one from the land, and the others beneath the water. They consist of two parts; an outer apartment, or court, and an interior chamber, the latter furnished with dried grass and leaves, to which the animal retires for repose, and where the female rears her young, which consist of from five to eight, or even nine, at a birth.

The muskrat, being amphibious, spends a considerable portion of its time in the water. Its apparatus for breathing, which enables it to remain for a length of time beneath the surface, is similar to that of the amphibians heretofore described. When the ponds and streams are frozen, it keeps air-holes open in the ice, after the manner of the seals.

In portions of the country which are sparsely inhabited, it will make short nightly excursions inland, in quest of sweet succulent roots, like the parsnip, beds of which, in the spring, we have seen quite ravaged and destroyed. This plant appears to be particularly agreeable to its taste, and we have often used it as a bait in trapping the animal. Hunters employ not only traps, but snares and spears in their war upon muskrats, and it is probable that the persecuted race will wholly disappear ere long from the vicinage of civilized life.

HYSTRICINA. — This family comprises rodents with imperfect clavicles, many of them more or less armed with spines. In the first division is

the family *Hystriidae*, or Porcupines, which are ranged under five subgenera: *Hystrix*, *Erethizon*, *Synetheres*, *Cercolabes*, and *Atherurus*, embracing ten species.—The Crested Porcupine, *H. cristata*, is remarkable for its crest or crown, and the *E. Buffonii* for its prehensile tail.

E. Dorsata.—This species is common in the Northern States of the Union and Canada. The peculiar feature of the animal is the armor of long, sharp-pointed spines with which the upper part of the body is clothed, rendering it invulnerable to the common beasts of prey. The older naturalists, and even many of the modern, down to the time of Buffon, entertained very erroneous opinions in regard to the porcupine, affirming that when attacked or enraged it hurled its sharp spines against its enemies with a force "sufficient to pierce a plank." This is far from the truth. We have seen the animal frequently in all situations, and are satisfied that it has no power to throw its spines at will. The error probably arose from the fact that when exasperated, or under the necessity of defending itself, the porcupine turns its back towards the enemy, buries its head between its fore legs, erects its quills, and shaking them violently, pushes backward against its foe with such energy as to force the sharp points of the spines into his flesh, inflicting painful wounds. As the quills are but slightly attached to the skin, they are often detached in an encounter, and left in the wound.

The panoply of this curious animal deserves a more particular description. The head is ornamented with a long crest of slender, tapering bristles, capable of being elevated or depressed at pleasure, and the fore and hinder limbs, as well as the under parts of the body, are clothed with stiff, short bristles, of a black color, lying close upon the skin. The dorsal spines are of two kinds; some, which seem intended to form a sort of cloak to the others, are very long, weak, and slender, and incapable of inflicting injury. The main bed of spines, however, consists of shafts of great strength and solidity, from four to seven or eight inches in length, thick in the middle, and tapering to each end. The end inserted into the skin is formed into a small pedicle, the other end is extremely sharp and prolonged. Thus, by the action of a subcutaneous muscle, of great extent and considerable thickness, termed *panniculus carnosus*, the animal is capable of raising them, clashing them, or depressing them at pleasure. In their ordinary state they lie nearly flat upon the body, with their points directed backward, but when elevated they radiate in every direction. If we take one of these spines, and examine it, we shall find that, in structure, it closely resembles the shaft of a quill-feather, except that it is more dense and hard; but internally it consists of a pithy substance, invested with a coat of hard enamel, of which the point is entirely composed. On looking at the point more narrowly, we shall see

that it is somewhat flattened, so as to present a sort of slight double edge, or raised line, the one opposite the other, and these edges are minutely jagged, the whole constituting a weapon of no trifling nature. Not only is the wound it inflicts very painful, but it is often very serious.

The spines of the porcupine are elegantly ringed with broad bands of black and white, and they make convenient "sticks for camel-hair pencils and steel pens."

In the second division of the *Hystricina* are the *Dasyproctidae*, the Agoutis, of which there are three or four species inhabiting South America and the West India Islands; and nearly approaching these the Pacas, somewhat larger, of a brown or buff color with white spots, and the *Capromyidae*, or Houtias, divided into nine genera, comprising twenty-eight species. These all resemble very large rats, and are more or less covered with spines, which are often partially concealed by the hair.

Genus *CHINCHILLA*.—This is a small family of rodents, entirely herbivorous, of gentle disposition and playful habits. It is a native of South America.

Genus *CAVIA*.—Of this genus, there are six species, of which the *C. cobai*, Guinea-pig, is well-known.

Genus *HYDROCHLERUS*.—There is but one species.

H. Cobice.—The Cabybara. This is the largest animal of the Rodentia, being equal in size to a Chinese-pig. It has a very deep, square head, no tail, webbed feet, and coarse hair. It is of gregarious habit, and flocks of them frequent the rivers of Guiana. Its flesh is delicate, and is much esteemed for food.

LEPORIDÆ.—The Hare Family. The hares are divided into two genera—*Lagomys* and *Lepus*. The former has shorter ears than the latter, no tail, and legs of nearly equal length. It comprises the *L. pika*, or Alpine hare, and four other species.

Genus *Lepus*.—Hares, Rabbits. Incomplete clavicles, six grinders above and five below on each side, grooved incisors, with two smaller behind those of the upper jaw, very long ears, and a short tail, are the generic characters of this group.

These animals are found in nearly all parts of the world. The European hare, *L. timidus*, is distributed through all Europe and some parts of Asia. The color of this species is of a tawny red on the back and sides, and white on the belly. The ears, which are very long, are tipped with black; the eyes are very large and prominent. The length of this animal is about two feet, and when full grown it weighs six to eight pounds. It is a watchful, timid creature, always lean, and, from the form of its legs, runs swifter up hill than on level ground. Hares feed on vegetables, and are



THE WAPITI OR ELK.



THE REIN DEER.



FALLOW DEER.



THE SPOTTED AXIS.



THE CHAMOIS.



THE BACTRIAN CAMEL.

very fond of the bark of young trees; their favorite food, however, is parsley. Their flesh was forbidden to be eaten among the Jews and the ancient Britons, whilst the Romans, on the contrary, held it in great esteem. The flesh is now much prized for its peculiar flavor, though it is very black, dry, and devoid of fat.

It is curious that the voice of the hare is never heard but when it is seized or wounded. At such times it utters a sharp, loud cry, not very unlike that of a child. It has a remarkable instinct in escaping from its enemies; and many instances of the surprising sagacity of these animals are on record, though it appears that all of them do not possess equal experience and cunning. A perpetual war is carried on against them by cats, wolves, and birds of prey; and even man makes use of every artifice to entrap these defenceless and timid creatures. They are easily tamed, but never attain such a degree of attachment as renders them domestic, always availing themselves of the first opportunity to escape. Among the devices of hares to elude their pursuers, the following have been observed: getting up into a hollow tree, or upon ruined walls; throwing themselves into a river, and floating down some distance; or swimming out into a lake, keeping only their nose above the surface; returning on their own scent.

Besides the *L. timidus* there are two other species peculiar to Great Britain—the *L. Hibernicus*, the Irish hare, and *L. variabilis*, the white or changing hare. This latter is reddish-brown in summer, and white in winter. In habits, disposition, and form, they do not materially differ. The hares are a gentle and timid race, and yet are capable of doing much injury to vegetation. "Towards evening they come abroad in quest of food, and continue to search for it during the night, in conformity with which habit their pupil is large, and of an oblong form. They advance by leaps, and as the hind legs are much longer than the anterior, they run with more ease up an inclined plane than down a declivity, especially if it be steep. During the day they repose in a crouching or half sitting posture in their form, which is a selected spot usually resorted to by them among grass or ferns, or in the midst of whins or other shrubs. Their senses of seeing and hearing are extremely acute. Their eyes being placed directly on the sides of the head, take in a wide range, and the large ears can be readily turned in any direction, forwards, outwards, or backwards, so as to catch the smallest sounds indicative of hostility. Being in a manner defenceless, and having no burrow or fastness to which they may retreat, they trust to their vigilance and great speed to enable them to elude their numerous enemies. The excellence of their flesh makes them liable to be destroyed by persons of all degrees."

L. Cuniculus.—The Rabbit, or Burrowing Hare. This species is about

twenty inches in length. The ears are about a fourth shorter than the head, with a blackish tip. The legs are shorter than those of the former species, and the feet are capable of digging. It constructs dwellings in the earth, where it retires to repose, or retreats from danger. "Although, on account of the comparative shortness of its legs, it is much inferior to the hares in speed, it yet runs with great celerity; and a number of rabbits scattered over a field, and retreating, on being alarmed, to their holes, afford a very pleasant sight, some scudding along in trepidation, others bounding over the shrubs or herbage, one disappearing here, another stopping a moment to look around before it plunges into its retreat, and perhaps a third peeping from the aperture. Early in the morning, when old and young are abroad, they may be seen gamboling in fancied security, for the rabbit is 'full of fun and frolic,' and takes pleasure in exercising its faculties. If there are fields and pastures in the neighborhood, they make excursions among the corn and grass, committing serious devastations when their numbers are great."

In the wild state, rabbits are not polygamous, but pair, and it is said, remain thus attached for life. The female, when about to deposit her young, forms a separate burrow, and makes a nest for their reception of the fur plucked from her breast. Unlike the young of the hare proper, they are naked at birth; but they grow rapidly, and in a short time are able to take care of themselves.

The *American hare*, so well-known under the name of *rabbit*, is found in most parts of North America. The summer hair is dark brown on the upper part of the head, lighter on the sides, and of an ash color below; the ears are wide, edged with white, tipped with brown, and dark colored on their back; tail, dark above, white beneath, having the inferior surface turned up; the fore legs are shorter and the hinder longer in proportion than those of the European. In the Middle and Southern States the change in the color of the hair is by no means as remarkable as it is farther north. This species is from fourteen to eighteen inches long. The American hare generally keeps within its form during the day, feeding only in the morning or at night. The flesh is in its prime late in the autumn and in the winter. The hare is not hunted in this country as in Europe, but is generally roused by a dog, and shot or caught by means of a common box-trap: this latter is the most usual mode. In its gait, it is very similar to the European, leaping rather than running. Like that animal, it breeds several times during the year. There are several other species of the hare inhabiting North America, of which the most remarkable is the polar hare. This occurs in vast numbers towards the extreme northern part of the continent. It is larger than the common hare. The fur is exceedingly thick and woolly, of the purest white in the cold months, with the exception of

a tuft of long black hair at the tip of the ears. In summer, the hair becomes a grayish-brown.

The domesticated white rabbits, with pink eyes, which are now so common, are albinos. They are pretty animals but by no means as intelligent and sprightly as the wild species.

There are thirty-one species of hares, but our limited space does not admit of further description.

ORDER XI.—THE MARSUPIALIA.

The name of this order is derived from the Latin word *marsupium*, a purse or pouch, and has reference to that peculiar appendage attached to the belly of the animal into which the young are received at birth, and where they are nourished until capable of self-support. The opossums of the American continent were the first specimens of this order known to science; but the discoveries of later years indicate that Australasia is the great central home of the pouch-bearing animals. In that remarkable region nature seems to have taken especial delight in this form of animal life, as there are already known upwards of seventy species of Marsupials, while but eighteen species altogether of other groups of quadrupeds have as yet been discovered. Although the members of this order are united by certain well-defined characters, as the abdominal pouch, the marsupial bones, a similar formation of the brain, and, with the exception of two genera, which are toothless, a more perfect dentition than any other of the placental mammalia, they still offer so many differences of organization, that it has been found convenient to separate them into several families, at the head of which is placed the opossum, as typical of the group, under the generic term of *Didelphys*.

Genus *DIDELPHYS*.—The Opossums. The opossums, says Mr. Waterhouse, may be at once distinguished from other mammalia by the great number of their incisors, of which there are ten in the upper jaw, and eight in the lower, making together eighteen, which are two more than are found in any other marsupial animal, and six more than are found in any placent quadruped.

"The fore feet in the opossums are furnished with five well-developed toes, which are armed with tolerably strong, compressed, and curved claws; the outer and inner toes are shorter than the others. The hind feet are furnished with four toes, having the same kind of claws as those of the fore feet, and a large inner clawless toe (formed like a thumb), which is opposed to the other toes. The tail is usually long, always more or less prehensile, sparingly covered with hair, and exhibiting scales, like the tail of a rat. The

ears are usually of moderate size, and generally naked; the tip of the muzzle and under surface of the feet are likewise naked. The fur of these animals is generally more or less woolly or frizzled. The stomach is simple and small, and the cæcum is of moderate size. The clavicles are well developed.

"The young of the opossums, in the earlier stage of their existence, are carried in the pouch of the mother, which they sometimes quit, but return to it in times of danger; but in some species the pouch is wanting, or exists merely in a rudimentary state, being represented by small folds of skin. The young of these, when very small, remain attached to the nipple of the parent, but when of larger size they quit this, and are carried on her back, where they hold themselves, by entwining their prehensile tails around the body of the parent.

"These animals are nocturnal, and remain hidden during the daytime in the hollows of trees, on their branches, or in thickets. In the night they wander forth in search of food, attacking birds, and sucking their blood like the weasels, or their eggs. They moreover feed upon reptiles and insects, and do not even refuse fruits; their diet, in fact, is omnivorous."

D. Virginiana. — The Virginian Opossum. We have often met this animal in the forests of Virginia, but it is frequent in all the Southern States. It is one of the largest of this genus, of a robust form, about thirty-seven inches in length, including the tail, which is fifteen inches. The fur is long and woolly, with very long hairs interspersed on the upper parts of the body. The general color is dirty-white, with a yellowish hue; the legs dark brown, and the eyes are surrounded with the same tint. The tail at the base is covered with fur like the body, the remaining portion being covered with scales. Its prehensile power makes it an important and useful organ.

The animal is very mischievous, and does much damage in poultry-yards, where it destroys large numbers of chickens, sucking the blood without eating the flesh. "It feeds also on roots and fruits, and is very active in climbing trees; will hang suspended from the branches by its tail, and by swinging its body, fling itself among the boughs of the neighboring trees; continues frequently hanging with its head downwards; hunts eagerly after birds and their nests; walks very slowly; when pursued and overtaken, will feign itself dead; not easily killed, being as tenacious of life as a cat. When the female is about to bring forth, she makes a thick nest of dry grass in some close brush at the foot of a tree. The number of young varies from twelve to sixteen. At their birth the young are scarcely more than a grain in weight, blind, naked, and shapeless, nevertheless they find the teats in the pouch, to which they fasten themselves so closely that they cannot be separated without difficulty. When they have attained the size of a mouse,

and all their parts are developed, which takes place in about five days, they then leave the pouch, but return to suckle, or to seek shelter in time of danger. During this time the female shows an excessive attachment to her young, and will suffer any torture rather than permit the pouch to be opened; for she has the power of opening or closing it, by the means of certain muscles. The flesh of the old animals is very good, its flavor resembling that of a sucking pig; the hair is dyed by the Indian women, and woven into garters and girdles. The skin is very fetid."

We have frequently seen the opossum served up on the tables of the Richmond hotels; but although the flesh seemed sweet and savory, we could not overcome our prejudice enough to taste it.

D. Azarae.—Azara's Opossum. "This species may at once be distinguished from the *D. Virginiana* by the broad black stripe on the forehead, the comparatively great extent of the black mark which runs through the eye, and the coloring of the ears, which, instead of being black, and narrowly edged with white at the apex, as in the Virginian opossum, are white, and clouded with black at the base. The general coloring of the present animal is moreover much darker, and the under parts of the body are, for the most part, of a brown color. M. Temminck also mentions the superior length of the tail as a distinguishing character, but this appears to vary considerably in different individuals."

This opossum is common in Brazil, and is found as far south as Moldanado, La Plata. Azara states that it lives in thickets, and also in open parts of the country. During the day it remains in holes, but at night comes forth, and is very destructive to poultry, eating the eggs, and sucking the blood of the birds which it catches. It climbs trees, eats fruit, and feeds also upon insects and reptiles.

D. Cunicivora.—Crab-eating Opossum. "This species is nearly equal in size to the *D. Virginiana*, and may be distinguished from that species and the *D. Azarae* by its deeper coloring, the long interspersed hairs on the upper parts of the body being black, or dark brown, instead of white. Its head is apparently longer and more attenuated, and the ears are of a uniform color.

"The crab-eating opossum is common in Guiana and Brazil. It climbs trees with facility, but runs badly; prefers marshy situations, where it feeds upon crabs, whence its name. It also attacks small birds and reptiles, and will eat insects. Its flesh is eaten by the natives, and is said somewhat to resemble that of the hare."

D. Californica.—The California opossum has a brown head, but the long, interspersed hairs on the upper parts of the body are totally white. The head is long, and the muzzle very narrow.

D. Breviceps.—The short-headed opossum may be distinguished by the shortness of the head and the smaller size of the ears. There is also a very dark-brown patch on the lower part of the cheek.

D. Quica.—The quica opossum is about twenty-seven inches long, including the tail. The general color is deep ashy-gray, somewhat blackish on the back. The species is common in Brazil, and is also found in Guiana and Surinam. It lives on trees, says M. Temminck, and preys upon small birds, and also feeds upon insects and fruits. In captivity it has been fed with flesh. During the daytime the quica, like the other species, hides itself and sleeps, having its body rolled into a ball.

D. Opossum.—This species, commonly called the Surinam opossum, is, including the tail, about nineteen inches in length. The general color is a rusty-red, with two white patches over the eye. It frequents Guiana and Surinam.

D. Nudicaudata.—A length of twenty-five inches, inclusive of the tail, which is as long as the head and body taken together, and covered with scales, and a yellowish-brown color above, and cream color below, are the distinguishing marks of the naked-tailed opossum. The animal is found in Brazil and Guiana.

D. Lanigera.—The woolly opossum inhabits Caazapa, Paraguay. Its length, exclusive of the tail, is about eight inches, and the general color is a bright brown.

D. crassicaudata, the thick-tailed opossum of Buenos Ayres, *D. Philander*, the Philander opossum of Surinam, and *D. cinerea*, the cinereous opossum of Brazil, offer no particulars in their history of sufficient importance to be noticed here.

D. Dorsigera.—Merian's Opossum. This animal is five inches long from the nose to the root of the tail, and is of a grayish-brown color. It inhabits Surinam. The females have no pouch; in its place there is a fold of the skin of the belly, which may be regarded as a rudimentary pouch. The young, when sufficiently old to leave the teats to which they are at first attached, are carried by the parent on her back, where they retain their position by means of their prehensile tails, which are entwined around that of the mother. It is this habit of carrying the young on the back which has given rise to the name *Dorsigera*. This name, however, might be applied with as much propriety to several other species (such as *D. cinerea*, *murina*, *tricolor*, and *brachyura*), in which there is only a rudimentary pouch.

D. Murina.—Murine Opossum. The length of head and body together is five inches; the general color of the upper parts of the body is of a yellowish hue, as also that of the head. This species inhabits the northern

parts of South America; burrows in the ground, and climbs trees, to the boughs of which it suspends itself by the tail. It feeds upon small birds and insects, and also fruits. The female has no pouch.

D. Elegans. — The Elegant Opossum. This species is four inches in length. The general tint of the upper parts of the body and head are ashy-gray washed with brown, the lower parts have a yellowish tint. These animals frequent thickets growing on the rocky hills of Valparaiso. They are exceedingly numerous, and, according to Mr. Darwin, are easily caught in traps, baited either with cheese or meat. The tail does not appear to be used as a prehensile organ. They are able to run up trees with some degree of facility.

D. Tristriata. — The striped opossum is a little larger than the common mouse, and was mistaken for a shrew by some of the earlier authors. It feeds upon insects, and lives in burrows constructed by itself.

D. tricolor, the tricolored opossum, *D. brachyura*, the short-tailed opossum, and *D. pusilla*, are also small insectivorous animals, inhabiting Paraguay, Surinam, and Guiana. They are destitute of the pouch.

D. Palmata. — The Yapock Opossum. This animal differs so widely from the true opossums, that some authors have separated it entirely from them. It is about twenty-four inches in length, including the tail, and of a somewhat robust form; its whole structure giving unmistakable proofs of partially amphibious habits. The hind feet are long, and tied together by an ample membrane. These animals are found in all the smaller streams of Brazil, and appear to extend as far northward as the shores of the Gulf of Honduras. They feed upon crustacea.

Genus *DASYURUS*. — The animals of this group are excessively carnivorous; the head and feet in all the species resemble more or less those of the dog. The structure of their teeth is very nearly the same as in the opossums. They differ, however, in having only eight incisors in the upper jaw, and six in the lower. They form an exception to the other Marsupialia, in having no cæcum. In external characters, the most striking difference consists in the tail being well clothed with hair, and in not being prehensile. These animals do not live upon trees, like most of the opossums, but hide themselves in holes or in crevices of rocks during the day, and at night prowl about like weasels in search of their prey. They are extremely voracious, and very destructive to the poultry and stock of the colonists of Van Diemen's Land and Australia. The generic name, *Dasyurus*, signifies "hairy-tailed," and refers to the abundant supply of hair with which the tails of the species are furnished.

D. Cynocephalus. — This animal is nearly the size of a wolf; has a head like that of a dog; the tail is slender, and about half the length of the

body; the fur is short, and of a pale brown color, with numerous transverse black marks on the back and haunches.

The *D. cynocephalus* is a native of Van Diemen's Land, where it is called the tiger, or hyena. It dwells amongst caverns and rocks in the deep and almost impenetrable glens in the neighborhood of high mountains, where it probably preys upon the bush-kangaroo, and various small animals that abound in those places. According to Mr. Harris, it is exceedingly stupid and inactive.

D. Ursinus.—This species has a very stout form, and is about twenty-one inches in length, exclusive of the tail. The fur is somewhat long and coarse, of a black color, with a broad white band across the chest, and running backwards over the base of the fore legs. This white mark, however, is sometimes wanting.

The inhabitants of Van Diemen's Land call this animal the "*Devil*." It is of nocturnal habit, extremely fierce, and a match for an ordinary dog.

Mr. Harris states that "these animals were very common on our first settling at Hobart Town, and were particularly destructive to poultry, &c. They, however, furnished the convicts with a fresh meal, and the taste was said to be not unlike veal. As the settlement increased, and the ground became cleared, they were driven from their haunts near the town, to the deeper recesses of the forests yet unexplored. They are, however, easily procured by setting a trap in the most unfrequented parts of the woods, baited with raw flesh, all kinds of which they eat indiscriminately and voraciously. They also, it is probable, prey on dead fish, blubber, &c., as their tracks are frequently found on the sands of the sea shore."

D. Macrourus.—The Spotted-tailed Dasyurus. The length of this species, aside from the tail, is about seventeen inches. The fur is rather short and harsh, of a deep rich chestnut-brown above, somewhat rusty over the haunches, and darker over the shoulders, and white beneath the head and body. The sides, also, are spotted with patches of white. It is a native of Van Diemen's Land.

D. Geoffroyi.—This animal is sixteen inches long, aside from the tail. The color of the upper parts of the body and head is a yellowish-brown, slightly inclined to greenish, by the admixture of rich fulvous yellow and black. It is a native of New South Wales.

D. Maugei.—Mauge's dasyurus is about the size of a rabbit, of a yellowish-gray color. It appears, however, that the color varies, as one variety is perfectly black.

D. Penicillatus.—This species is found throughout the colony of New South Wales. It is about the size of a rat, and is distinguished for its large ears and brushy tail. The color of the upper parts of the body is gray; of the under parts, white.

D. Flavipus. — The general color of this animal is a yellowish-gray; the feet are yellow. It is a small creature, about four inches long, exclusive of the tail, and is often seen in New South Wales, both on the ground and on trees, to the trunks of which it clings very closely, keeping the legs widely separated, and moving in little starts.

D. Minimus is a little longer than the above.

D. Murinus is a small animal, less than the common mouse in size, and of a general grayish-brown color.

Genus MERMECOBIUS. — This genus is founded on a small animal allied to the Dasyuri, but differing from them in its somewhat extraordinary dentition, having fifty-two teeth — a number surpassing that of any known mammalian, unless it be certain armadillos and cetaceans.

M. Fasciatus. — The Banded Myrmecobius. This species is of the size of a squirrel, with a long, pointed head. The general color is a rusty-red, crossed with cream-colored bands.

This beautiful and interesting little animal was first discovered by Lieutenant Dale, whilst on an exploring party in the interior of the country, at the Swan River settlement, and was discovered about ninety miles to the south-east of that river. "Two of these animals," says Lieutenant Dale, "were seen within a few miles of each other. They were first observed on the ground, and on being pursued, both directed their flight to some hollow trees which were near. We succeeded in capturing one of them; the other was unfortunately burnt to death in our endeavor to dislodge it by fumigating the hollow tree in which it had taken refuge. The country in which they were found abounded in decayed trees and ant hills."

M. Rufus. — Red Mymecobius. An Australian animal, of small size, discovered by Major Mitchell, is thus named. The men composing his party called it the *red shrewmouse*.

Genus PERAMELES. — Belonging to this group are six species, viz., *P. lagotis*, rabbit-eared perameles; *P. nasuta*, or long-nosed perameles; *P. Gunnii*, Gunn's perameles; *P. obesula*, short-nosed perameles; *P. Doreyanus*, and *P. Bongainvilli*. These animals are generally small, dwelling in thickets, and for the most part repose during the day, and seek their food at night.

Closely allied to the foregoing is an animal which Mr. Ogilby designates by the title of *Cheropus Ecaudatus*. A brief description by Major Mitchell contains all the information in regard to it that we have been able to gather. He says, "The most remarkable incident of this day's journey" (June 16, 1836) "was the discovery of an animal of which I had only seen a head, in a fossil state, in the limestone caves of Wellington Valley, where, from its very singular form, I supposed it to belong to some extinct species. The

chief peculiarity then observed was the broad head and very long, slender snout, which resembled the narrow neck of a wide bottle; but in the living animal the absence of a tail was still more remarkable. The feet, especially the fore legs, were also singularly formed, the latter resembling those of a pig; and the marsupial opening was downwards, and not upwards, as in the kangaroo, and others of that class of animals. This quadruped, when discovered by the natives, was on the ground; but on being chased, took refuge in a hollow tree, from which they took it alive, all of them declaring that they had never before seen an animal of the kind."

Genus *MACROPOUS*.—The Kangaroos. These animals, says Waterhouse, are remarkable for the flexibility and lightness of the anterior parts of the body, the smallness of the anterior members, and the great size of the posterior members, and of the tail. In their ordinary position the fore parts are elevated, and slightly inclined forwards, and they rest upon the hinder extremities and tail, hence the whole weight and strength are thrown into these parts; the great length and size of the tail also serves to balance the body, not only when in its ordinary semi-erect position, but in the enormous leaps by which these animals progress. The fore part of the body being elevated, gives to the eye a wide range, which is essential to animals inhabiting for the most part open plains, and whose escape from danger must be by flight. The prehensile and unguiculate structure of the anterior extremities "appear to have been indispensable to animals requiring to perform various manipulations in relation to the economy of the marsupial pouch, and when such an animal is destined, like the ruminant, to range the wilderness in quest of pasturage, the requisite powers of the anterior members are retained and secured to it by an enormous development of the hinder extremities, to which the function of locomotion is almost restricted."

On the fore feet there are five well-developed toes, each of which is armed with a large and strong nail, and this is curved, concave on the under surface and convex above; the two outer toes are the shortest, and the central one is the longest. The hind feet are furnished with one very large central toe, and an outer one, which is shorter and smaller, but, like the first, armed with a large, solid nail, which is but slightly curved, convex, and sometimes keeled on the upper surface, and flat beneath; on the inner side of the foot are two small, slender toes, united in one common integument, and having the appearance of a single toe; the nails, however, are separate, of small size, and hollow beneath. These nails I have repeatedly seen used by the animal to cleanse its fur. The tarsus is devoid of hair beneath, but covered with minute hardened tubercles; these are most distinct in those species which inhabit rocky situations. The ears are usually of moderate size, oval form, and tolerably well clothed with hair.

The Macropi have twenty-eight teeth, sixteen above and twelve below. In the first division of the family of Macropodidae are the *Hypsiprymi*, or kangaroo rats, which differ chiefly from the true kangaroos in possessing distinct canines. Like the latter, they live on vegetables, and progress on their hind legs. As little is known of their habits, we can only record their names: *Hypsiprymnus murinus*, *H. Gilbertii*, *H. Whitei*, *H. penicillatus*, *H. Ojilbyi*, *H. cuniculus*, *H. rufescens*, and *H. Graii*. In the second division are the Macropi proper.

Macropus Giganteus.—The Great Kangaroo. This animal attains a length of about four feet, exclusive of the tail, which is nearly three feet long. The general color is a grayish-brown, but the mustaches and toes are black. It was first discovered by some of Captain Cook's party in 1770, while that distinguished navigator was on the coast of New South Wales. He thus alludes to it: "On Friday, June 22, a party engaged in shooting pigeons for the use of the sick of the ship, saw an animal which they described to be as large as a greyhound, of a mouse color, and extremely swift."

Pennant's interesting account of this creature we subjoin in his own words. "It inhabits the western side of New Holland and Van Diemen's Land. The natives call it Kangaroo. It lurks among the grass, feeds upon vegetables, drinks by lapping, goes chiefly on its hind legs, making use of the fore feet only for digging, or bringing its food to its mouth. It is very timid. At the sight of men flies from them by amazing leaps, springing over banks seven or eight feet high, and going progressively from rock to rock. It carries its tail quite at right angles with its body when it is in motion, and when it alights, often looks back. It is much too swift for greyhounds; is very good eating, according to our first navigators; but the old ones, according to the report of more recent voyagers, were lean, coarse, and tough.

"The weapon of defence was its tail, with which it would beat away the strongest dog.

"In the spring of the present year (1793) I had an opportunity of observing the manners of one brought into the capital alive. It was in full health, very active, and very mild and good-natured. On first coming out of its place of confinement, it for a little time went on all fours, but soon assumed an upright attitude. It would sport with its keeper in a very singular manner. It first placed its tail in a perpendicular manner, erected its body on it as a prop, and then raising its whole body, darted its hind legs on the breast of the man. It was capable of striking with great force if provoked, and it could scratch violently with its fore claws."

The kangaroos, although drawn in great numbers to places where food is

abundant, are not gregarious. They lodge during the heat of the day amongst high ferns, such as the *Pteris esculenta*, high grass, and in under-wood. They are good swimmers, and it frequently happens that when one is hunted, it will seize the pursuing dog in its arms, and plunge it into the nearest water until it is drowned.

M. Laniger. — Woolly, or Red Kangaroo. This species is considerably larger than the former, being not far from five feet in length, and is remarkable for its short, woolly fur. The prevailing color is fulvous-red, tinted with gray on the head, neck, shoulders, and back.

M. Fuliginosus. — Sooty Kangaroo. The size of this animal is nearly equal to that of the last. The general color is sooty-brown.

M. Unguifer. — Nail-bearing Kangaroo. The head and body are about twenty-five inches long, the latter slender, and of moderate size. The general color of the upper parts of the body is buff-yellow; the under parts, head, and limbs are white. The long tail terminates in a tuft of black hairs, which conceals a nail of a black color, thin and hollow beneath, and resembling a finger nail, both in texture and form. It inhabits the north-west coast of Australia.

M. Frenatus. — Bridled Kangaroo. This is a handsome animal, with a slender, elegant form, and short, soft fur. The color of the upper parts is brown-gray; of the under parts, white. The tip of the tail is clothed with a tuft of grizzly-black hairs, and furnished with a small horny tubercle. The length, without the tail, is twenty-three inches. A native of New South Wales.

M. Lunatus. — Crescent-marked Kangaroo. This is a small species, eighteen inches in length. The color is gray, with a curved white mark on the sides of the body, a little behind the base of fore legs.

M. Leporides. — In size, and in the character and color of the fur, this animal has a remarkable resemblance to the common hare. It inhabits the interior of Australia.

All the kangaroos noticed above are distinguished by a hairy muzzle; those which follow have the muzzle naked, and constitute the sub-genus *Halmaturus*.

M. Parryi. — Parry's Kangaroo. This pleasant-looking animal is nearly three feet in length from the nose to the root of the tail. The general color is silvery-gray, brown upon the back, and the belly and tail are white; the latter is tipped with black.

Sir Edward Parry states that "the animal was obtained at Stroud, near Port Stephens, in the latitude of about 30° south. It was caught by the natives, by whom it is called *Wällaroo*; having been thrown out of its mother's pouch when the latter was hunted. At that time it was somewhat less than

a rabbit; but having continued in the possession of Sir Edward Parry for more than two years in New South Wales, besides six months on the passage to England, it may be considered as full grown. It was never kept in confinement until it was embarked for England, but lived in the kitchen, and ran about the house and grounds like a dog, going out every night after dark into 'the bush,' or forest, to feed, and usually returned to its friend the man cook, in whose bed it slept, about two o'clock in the morning. Besides what it might obtain in these excursions, it ate meat, bread, vegetables, in short, everything given to it by the cook, with whom it was extremely tame, but would allow nobody else to take liberties with it. It expressed its anger, when very closely approached by others, by a sort of half grunting, half hissing, very discordant sound, which appeared to come from the throat, without altering the expression of the countenance. In the daytime it would occasionally, but not often, venture out to a considerable distance from home, in which case it would sometimes be chased back by strange dogs, especially those belonging to the natives. From these, however, it had no difficulty in escaping, through its extreme swiftness, and it was curious to see it bounding up a hill and over the garden fence, until it had placed itself under the protection of the dogs belonging to the house, especially two of the Newfoundland breed to which it was attached, and which never failed to afford it their assistance by sallying forth in pursuit of its adversaries."

Captain Parry further observes that, "like all other kangaroos, this animal, when in active motion, never touches the ground with its tail, merely using it to form a tripod when standing erect. It seems to inhabit no part of the colony in the latitude of Sydney."

M. Elegans. — Elegant Kangaroo. This differs from the kangaroos which we have so far noticed, in being of a gregarious habit, sometimes being found in herds of thirty or fifty. The entire length is sixty-two inches, and the color is a fine silver-gray.

M. Bennettii. — Bennett's Kangaroo. The color of this species is a deep-gray, and the length, to the root of the tail, thirty-four inches. When at rest it curves its tail under the body between the hind legs, which are thrust straight forward, and the fore feet are placed on the ground.

Mr. Gunn says this species "is by far the most common everywhere (in Van Diemen's Land), easily overtaken by swift kangaroo dogs, and used most generally for food. When roasted, or the tail made into soup, it bears a pretty strong resemblance to hare, and is universally esteemed. The skins are tanned, and are the only kind of leather used in the colony for the uppers of ladies' and gentlemen's boots and shoes. Many thousands of skins are annually exported from Van Diemen's Land to New South Wales for the same purpose.

"The kangaroos usually feed at night, and in the evenings and mornings, but they are exceedingly sharp-sighted at daytime."

The *M. albus*, white kangaroo, *M. ruficollis*, red-neck kangaroo, *M. rufo-griseus*, rusty-gray kangaroo, *M. Walabatus*, Walabee kangaroo, *M. Irna*, *M. manicatus*, black-footed kangaroo, *M. Billardierii*, red-bellied kangaroo, *M. dorsalis*, *M. Eugenii*, Eugene Island kangaroo, *M. Derbianus*, Lord Derby's kangaroo, and *M. brachyurus*, short-tailed kangaroo, do not differ from the preceding species except in size and color.

M. Brunii.—Filander Kangaroo. The following is Le Brun's account of the filander:—

"Being at the country house of our general (at Batavia), I saw a certain animal called *filander*, which was somewhat remarkable. There were many individuals, with full freedom, running with some rabbits, which had their holes under a little hillock encircled by a balustrade. This animal has the hinder legs much longer than the front, and is nearly of the same size, and has nearly the same fur, as a large rabbit. The head approaches in form to that of a fox, and the tail is pointed. But the most extraordinary circumstance is, that it had a bag-like opening in the belly, into which the young enter, even when they have attained a considerable size. They are often seen with the head and neck thrust out from this bag; when, however, the mother is running they are not visible, but keep to the bottom of the pouch, since she leaps much."

M. Fuscatus.—The banded kangaroo is a beautiful little species, about the size of a rabbit, which it resembles in the general color and texture of the fur. According to M. Peron the banded kangaroo is found at Dirck Hartog's Island, and on one or two neighboring islands in Shark's Bay, on the west coast of Australia. It is said to inhabit the impenetrable low thickets, formed of a species of *mimosa*, which are found in those islands; from these bushes they cut away the lower branches and spines so as to form galleries communicating one with another, and where they take refuge in time of danger. The females bring forth but one young at a time.

Although abundant in the islands of Shark's Bay, Peron states that none were to be found on the main land. These little kangaroos, like all those feeble animals which have neither the power of attack nor of defence, are, like the hares, extremely timid. The slightest unusual noise caused them to take flight to the thick brushwood in which their galleries are constructed, and where it is impossible to pursue them; hence, although very common, they are difficult to procure.

The flesh of these animals is said to resemble that of the rabbit, but has a slight aromatic flavor, arising probably from the nature of the plants on which they feed, nearly all of which are fragrant.

At the time that Peron visited the islands all the females carried young in their pouch, and the courage with which they sought to save their offspring was truly admirable. Although wounded, they flew with the young in the pouch, and never left them, until, overcome with fatigue and loss of blood, they could no longer carry them. They then stopped, and squatting themselves on the hind legs, helped the young to get out of the pouch by means of the fore feet, and sought to place them in a situation favorable for retreat.

The three following species, *M. robustus*, strong-limbed kangaroo, *M. penicillatus*, brush-tailed kangaroo, and *M. brachiolis*, short-eared rock kangaroo, form the sub-genus *Petrogale*. They appear to be gregarious, love rocky places, where they repose in holes. "They display great activity in leaping from point to point on the ledges of the rocks. Their broad feet, covered with minute tubercles beneath, giving a roughness to the surface, combined with the more compact form of the body, and the bushy tail, are well adapted to such habits. The tarsi are certainly shorter than usual in the kangaroos, and more densely clothed with hairs. Beyond these characters, we can perceive none in which the species can be distinguished from the preceding."

We proceed now to a consideration of the PHALANGISTIDÆ. Although at first view a phalanger is as unlike a kangaroo as can well be imagined, yet a closer inspection shows a distinct relationship. The phalangers have the same dentition as the kangaroos, and the same two toes on the hinder foot united. They resemble the kangaroo rats in possessing a small canine in the upper jaw.

All the phalangers are nocturnal in their habits. They live in trees, and are expert climbers, though not active in their movements. During the day they remain concealed in the hollows of trees, but about twilight they quit these hiding and sleeping places, and climb amongst the branches of the trees to seek their food, which consists of the young buds, leaves, and fruits. These, it would appear, are more easy of digestion, or more nutritious, than the food of the kangaroos, for the stomach of the present animals is more simple. MM. Quoy and Gaimard state that the phalangers of the islands north of New Holland feed upon aromatic fruits, but when some specimens they had in confinement could not procure this food they did not refuse cooked meat. Their flesh is eaten by the natives, and is said to have a good flavor. In Van Diemen's Land they are said to feed chiefly on the leaves of the eucalypti, and Mr. Gunn remarks, that orchards in country places suffer sometimes from the opossums eating the leaves and young branches of the trees.

The hinder feet of these animals are always furnished with a large opposa-

ble thumb, which is nailless, besides which there are four well-developed toes, all armed with large, compressed, curved claws; the two innermost of these toes are joined together almost to the extremity. They are rather shorter than the other two toes. On the fore feet are five well-developed toes, which, like those of the hind feet, are armed with strong, compressed, curved claws; the innermost toe is the shortest, and the three central ones are the longest.

In the various species comprised in the *Phalangistidae* we find certain modifications, both in their dentition and external characters, upon which genera and sub-genera have been founded. They are divided into three genera: those which have a large membrane extended from the sides of the body, and joined to the fore and hind legs, as in the flying squirrels, and which enables them to sail in the air like a parachute (but not to fly), constitute the genus *Petaurus*. To those which have no such membrane, and have a prehensile tail, the generic term *Phalangista* (Geoffroy Saint-Hilaire) is now restricted; and thirdly, we have the genus *Phascolarctos*, containing only one species (the Koala), which is at once distinguished by its want of tail.

Genus *PHALANGISTA*.—The species of this group are rather handsome animals, varying in size from a length of twenty inches or more to that of a common mouse.

P. Ursina.—Ursine Phalanger. This animal is about the size of a cat, and of a brown-black color. It inhabits the northern parts of the Celebes. During the day it hides itself beneath the foliage on the branches of the trees. The flesh is eaten by the natives.

P. Chrysorrhæus.—Yellow-rumped Phalanger. This species is a native of Ambaina, and is about the size of the wild-cat.

P. Maculata.—Spotted Phalanger. This, as its name suggests, is a spotted animal. It is about equal to the domestic cat in size, and lives in trees. It inhabits New Guiana and the islands of Ambaina, where its flesh is eaten by the natives.

P. Cuvifrons.—The hollow-fronted phalanger is of the size of the common rabbit. The fur is white. Habitat same as the last.

P. vulpine, vulpine phalanger, *P. fuliginosa*, *P. Cuvieri*, *P. Xanthopus*, yellow-footed phalanger, and *P. canina*, canine phalanger, are distinguished by an extremely bushy tail.

P. Cookii, Cook's phalanger, *P. viverrina*, viverrine phalanger, and *P. nana*, pigmy phalanger, have the tail less hairy than the preceding species. The fore feet have the two inner toes on a different plane to the two outer.

The *P. nana* is a curious little animal, about the size of a dormouse. Mr. Bell furnishes the following interesting account of the habits of these creatures:—

"In their habits they are extremely like the dormouse, feeding on nuts, and other similar food, which they hold in their fore paws, using them as hands. They are nocturnal, remaining asleep during the whole day, or, if disturbed, not easily roused to a state of activity; and coming forth late in the evening, and then assuming their natural rapid and vivacious habits. They run about a small tree which is placed in their cage, using their paws to hold by the branches, and assisting themselves by their prehensile tail, which is always held in readiness to support them, especially when in a descending attitude. Sometimes the tail is thrown in a reverse direction, turned over the back, and at other times, when the weather is cold, it is rolled closely up towards the under part, and coiled almost between the thighs. When eating, they sit upon their hind quarters, holding the food in their fore paws, which, with the face, are the only parts apparently standing out from the ball of fur, of which the body seems at that time to be composed. They are perfectly harmless and tame, permitting any one to hold and caress them without ever attempting to bite, but do not evince the least attachment either to persons about them, or even to each other."

Genus PETAURUS.—The members of this group are distinguished by a membrane extending from limb to limb, and by a tail densely clothed throughout with fur.

P. Toguanooides.—The Flying Opossum. In New South Wales this animal is called the gray flying squirrel, from its resemblance to the rodent of that name in its mode of locomotion, gliding from tree to tree by the aid of its parachute membrane. The head of this species is very short, and the tail very long, and the whole animal is covered with remarkably long hair, of a brownish-black color. It is about the size of a rabbit.

P. Flaviventer.—The Yellow-bellied Petaurus is about twenty inches long to the root of the tail. The general color is grayish-brown, with a yellowish tint.

P. Macrourus.—Long-tailed Petaurus. According to Shaw, this species is about the size of the black rat, and is of a dark or brownish-gray color above, and whitish beneath.

P. Sciureus.—The Squirrel-like Petaurus is an animal about eight and a half inches long, of an ashy-gray color above, and white beneath. It is a native of New South Wales, where it is sometimes called "Norfolk Island flying squirrel," and also the "sugar squirrel."

P. Breviceps.—Short-headed Petaurus. This species is about six and a half inches in length, and of a general ashy-gray color. Habitat same as the preceding.

P. Pygmaeus.—Pygmy Petaurus. A very diminutive species, called

sometimes by the Australian colonists, the *flying mouse*. It is of a dusky-brown color, and is numerous in the vicinity of Port Jackson.

Genus *PHASCOLARCTOS*. — This genus contains but one species, *P. fuscus*, or the koala. The length of the animal is twenty-five inches. The head is short, and the ears are clothed with a very long fur. The general color is ashy-gray, but the rump and lower parts of the body are white. The koala climbs trees, and feeds upon the leaves and fruits. In its mode of climbing, it resembles a bear. The female carries her young one on her back when it is capable of leaving the pouch, until it has attained a considerable size.

Genus *PHASCOLOMYS*. — This genus comprises but a single species.

Phascolomys Wombat. — The Wombat. This is rather a large animal, three feet in length, with short limbs, and stout, heavy body. The fur is coarse, of a gray color, mottled with black and white. It is found in nearly all parts of Australasia. When enraged it emits a hissing sound, which can be heard at a considerable distance. It is slow in its movements, feeds on grass and roots, and constructs its retreat in the earth.

The two animals we are about to introduce to the reader constitute, according to some naturalists, a distinct order. Cuvier classes them with the *Edentata*; but they differ essentially from that order in their anatomical structure, while the possession of the marsupial bones, and several other marsupial characters, and the fact that they are inhabitants of a region where the mammalians are almost exclusively of this order, justify their consideration in connection with the Marsupalia.

Echidna Hystrix. — Mr. Waterhouse remarks on this animal, that it is "about the size of a hedgehog, which it resembles in being covered with spines." The head of the echidna is elongated, and the muzzle resembles a beak. The mouth has no teeth, but is furnished with an extensile tongue. The echidna is found in New South Wales, in the islands of Bass's Straits, and in Van Diemen's Land. It burrows with great facility, and lives upon insects, which, like the ant-eaters, it procures by means of its long, slender tongue, which is always covered with a viscous matter.

Messrs. Bass and Flinders, when at Twofold Bay, state that their dogs found a porcupine ant-eater, or echidna, but that the dogs made no impression on the animal, which escaped by burrowing in the loose sand, not head foremost, but by sinking himself directly downwards, and thus presenting nothing but his prickly back to his adversaries.

A living specimen of the echidna was procured by Messrs. Quoy and Gaimard, at Hobart Town, and these naturalists furnish us with an

interesting account of the habits of the animal as observed in confinement. They describe it as an apathetic and stupid animal; for the first month after its capture it took no sustenance whatever, and became very thin, though without appearing to suffer. It was fond of obscurity, shunning the light during the day, and crouching to the ground with its head between its legs; in this position it presented at all parts a mass of spines like a hedgehog, but was not able to roll itself up in a ball like that animal. Notwithstanding the inactivity of the echidna, it appeared to like its liberty, for it made constant efforts to get out of the cage in which it was placed. It burrowed with a rapidity truly astonishing. A large chest of earth containing plants being given to it, the animal arrived at the bottom in less than two minutes. The muzzle, although extremely sensitive, assisted in the work.

After a month of abstinence it took to eating. The food given to it was a mixture of flour, water, and sugar, of which it consumed nearly half a glass per day.

Ornithorhynchus Paradoxus.—This curious animal is about twenty inches in length; the body tapers at both extremities; the head is small, but the facial portion is greatly developed, and may be compared to the beak of a duck. The legs are so short that they do not prevent the body from touching the ground. The feet are webbed, and armed with powerful claws, which enables the animal to swim and burrow with facility.

The burrows of the ornithorhynchus somewhat resemble those of the water-mole, and sometimes are forty or fifty feet in length. According to Mr. G. Bennett, these animals have a great fondness for the water, and "chiefly frequent the open and tranquil parts of the stream, covered with aquatic plants, where the steep and shaded banks afford excellent situations for the excavation of their burrows. Such expanses of water are by the colonists called 'ponds.' The animals may be readily recognized by their dark bodies just seen level with the surface, above which the head is slightly raised, and by the circles made in the water around them by their paddling action. On the slightest alarm they instantly disappear; and, indeed, they seldom remain longer on the surface than one or two minutes, but dive head foremost, with an audible splash, reappearing, if not alarmed, a short distance from the spot at which they dived. Their action is so rapid, and their sense of danger so lively, that the mere act of levelling the gun is sufficient to cause their instant disappearance; and it is consequently only by watching them when diving, and levelling the piece in a direction towards the spot at which they seem likely to reappear, that a fair shot at them can be obtained. A near shot is absolutely requisite; and when wounded they usually sink immediately, but quickly reappear on the surface."

Mr. Bennett captured a female, and placed it in a cask, with moss, mud,

and water, in which situation it soon became tranquil, and apparently reconciled to its confinement. The next morning, tying a long cord to its leg, he roused it, and placed it on the bank of the river. It soon found its way into the water, and travelled up the stream, and delighted in those places which abounded most in aquatic weeds. "When diving in deep and clear water, its motions were distinctly seen. It sunk speedily to the bottom, swam there for a short distance, and then rose again to the surface. It appeared, however, to prefer keeping close to the bank, occasionally thrusting its beak into the mud, from whence it evidently procured food, as on raising the head, after withdrawing the beak, the mandibles were seen in lateral motion, as is usual when the animal masticates. The motions of the mandibles were similar to those of a duck under the same circumstances. After feeding, it would lie sometimes on the grassy bank, and at others, partly in and partly out of the water, combing and cleaning its coat with the claws of the hind feet. This process occupied a considerable time, and greatly improved its sleek and glossy appearance. After its second excursion it was replaced in the box, which was not opened again until the following morning, when it was found to have made its escape."

Mr. G. Bennett proceeds to describe in detail their habits in a state of captivity. "Their various attitudes, when in a state of repose, are curious. The most favorite posture of the young animals appears to be lying rolled up like a ball. This is effected by the fore paws being placed under the beak, with the head and mandibles bent down towards the tail, the hind paws crossed over the mandibles, and the tail turned up; thus completing the rotundity of the figure. The young were allowed to run about the room; but the old one was so restless, and damaged the walls so much by her attempts at burrowing, that it was found necessary to confine her to the box. During the day she would remain quiet, huddled up with her young ones; but at night she became very restless, and eager to escape. The little ones were as frolicsome as puppies, and apparently as fond of play, and many of their actions were not a little ludicrous. During the day they seemed to prefer a dark corner for repose, and generally resorted to the spot to which they had been accustomed, although they would change it on a sudden, apparently from mere caprice. They did not appear to like deep water; but enjoyed exceedingly a bathe in shallow water, with a turf of grass placed in one corner of the pan. They seldom remained longer than ten or fifteen minutes in the water at one time. Though apparently nocturnal, or at least preferring the cool and dusky evening to the glare and heat of noon, their movements in this respect were so irregular as to furnish no grounds for a definite conclusion. They slept much, and it frequently happened that one slept while the other was running about."

ORNITHOLOGY.

Plate II



BRACHYLOPHUS RHODINUS
(Green Woodpecker)



MALACOPTERUS BARBARUS.
(Barbary or Yellow Crowned Bush Shrike)



PARUS CAELESTIS
(Blue Titmouse)



PHOENICURA TITHYS
(The Tithys Redstart)



PLATYRHYNCHUS CANCRINEUS
(Yellow Crested Flat Bill)



PLOCEUS BRACHYPTERUS
(Round Winged Weaver)

SECOND CLASS OF VERTEBRAL ANIMALS.*

AVES (Birds).

THERE is no other class in animated nature which presents to the great majority of observers such peculiar interest and attraction as the birds; and for this great popularity there is abundant reason when we consider the sometimes wonderful intelligence of these animals, their almost infinite variety of form, their entertaining habits, their charming and varied songs, and their elegant, sometimes gorgeous, plumage.

Naturalists rank them second to the mammals in the great division of vertebrates; but, putting man, with his superior intelligence, aside, birds are endowed with attributes which should place them on an equal footing with the mammals, for, with an intelligence often susceptible of as great education as the others, with a nervous system often as finely organized, with wonderful instincts, prompting them to traverse thousands of miles in migrations in order to avoid the severity of a northern winter, and to return to the security of an arctic summer for the purpose of securing a safe and unmolested nesting-place; their astonishing mechanical skill displayed in the preparation of their nests, each selecting and elaborating a form perfectly adapted to its wants and mode of life; and the diversity of life to which their various forms are adapted, rendering the earth, the heavens, and the waters accessible to, and almost all inhabitable by them,—all these certainly indicate them as superior beings.

As in the mammals, we find among birds, groups, each with peculiarities, both of food and life, so marked that they constitute at once natural divisions, plainly noticeable to the most casual observer. The rapacious birds, the eagles, hawks, vultures, and owls—are as distinctly characterized from the gallinaceous birds—the grouse, pheasants, turkeys; and the graminivorous birds—the sparrows, finches—are from ducks, geese, swans, and gulls, as are the carnivorous mammals—the lion, tiger, fox—from the ruminants—the deer, oxen, sheep.

It is in tracing out through the various subdivisions of these natural groups the peculiarities of each, and noting all the varieties of form and habit, that give to the study of ornithology its greatest charm; and the student, on viewing and comparing the adaptability of each form to its life, is lost in wonder and admiration at the sublime wisdom that called into being such marvels of beauty and completeness.

* The material for this department is prepared by Edward A. Samuels, Esq., author of "*Ornithology of New England.*"

As before remarked, the birds constitute a large group in the great division vertebrata. On glancing at the skeleton of a bird, the vertebral structure is at once apparent, but here the resemblance to the mammals almost ends. The skeleton is light, all the larger bones, those of the limbs especially, being hollow and marrowless. The body is covered with feathers; the jaws, instead of being provided with teeth, are incased in a horny sheath, which is usually smooth, and on the edges sharp; the digestive, respiratory, and circulatory systems are essentially different from those of the mammals, and the young are always produced from eggs, which have been expelled from the mother bird, and incubated upon for a length of time which varies in the different families.

The digestive apparatus of birds, while differing from that of the mammals, varies somewhat in the different orders, according to their peculiar diet. Generally speaking, however, birds have first the crop (a large muscular sac, a dilation of the œsophagus, which is situated in front of the collar bone), "which is abundantly supplied with glands, and acts as a sort of first stomach, in which the food receives a certain amount of preparation before being submitted to the action of the proper digestive organs." A little below the crop is a second enlargement of the canal, "the commencing portion of which is surrounded by a zone of glands pouring out a solvent or gastric juice. This portion is called the *ventriculus succentarius*." The canal then conducts to the gizzard, which organ is composed of "two firm voluminous muscles, and is lined with a thick, tough membrane." These muscles exert a sort of opposite grinding motion, with pressure on each other, like two millstones, and the effect is the reduction of grain, seeds, and other food into a pulpy mass; but this cannot be done unless a number of pebbles and coarse sand are swallowed with the food, which, by the working of the walls, triturate the food among them. In mollusk-feeding ducks the gizzard is enormously powerful, grinding down hard and sharp shells. In granivorous birds it is also hard and powerful, while in predaceous birds it is thin and membranous. The respiratory system of birds is also worthy of more than a passing notice. M. Jacquemin, in an essay read before the French Academy, gives us the following facts.

After observing that the air enters not only into the lungs and about the parieties of the chest, but that it penetrates also by certain openings (foramina) into eight pneumatic bags, or air-cells, occupying a considerable portion of the pectoro-abdominal cavity, and thence into the upper and lower extremities, he draws these conclusions: 1. That the pneumatic bags are so situated as to be ready conductors of the air into the more solid part of the bird's body; and that the air, by surrounding the most weighty viscera, may support the bird in flight, and contribute to the facility of its motions.

when so employed. 2. That the quantity of air thus introduced penetrates the most internal recesses of their bodies, tending to dry the marrow in the bones, and a portion of the fluids. A diminution of specific gravity is the result, the cause of which has been, in his opinion, vainly sought in the quantity alone of permeating air.

3. That in birds the oxidation of the nourishing juices is not entirely effected in the lungs, but is much promoted also in the pneumatic bags above-mentioned, for their contained air operates through the membranes upon the blood vessels and lymphatics in contact with them: a more complete and speedy oxidation is the result. 4. That not only the skeleton, but all the viscera are much more permeable by air in birds than in any of the other vertebrated animals. 5. That the air reservoirs are not always symmetrical, their shape and extent depending entirely upon the form and situation of the organs among which they occur; but the supply is so modified, that the total quantity received into the pneumatic bags on the right side of the body is equal to that which enters into those on the left; and, indeed, without the maintenance of this condition the act of flying would be impossible, and that of walking difficult. 6. That no portion of a bird's structure is impervious to air. It reaches even the last joints (phalanges) of the wings and feet, and the last caudal vertebrae, or rump-bones. The quill of the feathers is not excepted, as has sometimes been asserted. 7. That the air within the head has a separate circulation, and does not directly communicate with the air pipes of the rest of the body. 8. That in no instance does the air come into direct contact with the viscera, or nourishing juices, but invariably through the medium of a membrane, however fine and transparent. 9. That the volume of air which birds can thus introduce into their bodies, and the force with which they can expel it, offer the only explanation how so small a creature as a singing bird (the nightingale, for example) is able to utter notes so powerful, and, without any apparent fatigue, to warble so long and so musically.

A writer on the economy of birds, treats of their circulatory and respiratory organs, as follows: "The organs of circulation and respiration in birds are adapted to their peculiar mode of life. They are not, however, separated from the abdominal cavity by a diaphragm, as in the mammalia. The heart consists of four distinctly separated cavities, — two auricles and two ventricles, — so that the venous and arterial blood can never mix in that organ, and the whole of the blood returned from the different parts of the body passes through the lungs before being again driven into the systemic arteries. The blood is received from the veins of the body in the right auricle, from which it passes through a valvular opening into the right ventricle, and is thence driven into the lungs. From these organs it returns through the

pulmonary veins into the left auricle, and passes thence into the ventricle of the same side, by the contraction of which it is driven into the aorta. This soon divides into two branches, which, by their further subdivision, give rise to the arteries of the body."

Throughout the bird's anatomy we can trace marked differences between the various organs and their economy and those of the mammals; but the limits and intentions of this volume will not permit an elaborate discussion of all these differences, nor is such necessary. All that is required is a general view of each group as we see it, without entering into unnecessarily minute details of anatomical examination.

As before remarked, the distinctive characteristics of the various groups of birds are so marked that they are at once apparent, and the subdivisions of the primary groups, as they separate from the others, also possess strong peculiarities. These great varieties of form have caused the arrangement of a number of classifications by different naturalists, each based on some one distinctive structural feature. Among these systems, that devised by Professor W. Lilljeborg of Upsala, Sweden, is receiving a large share of the attention and favor of ornithologists. His system is based upon the following plan:—

"Irritability seems to us the most distinguishing character for birds, and this should consequently be taken into consideration, more than others, with regard to their classification. The swimmers seem to us the lowest, from their showing a tendency to the lowest form of vertebrated animals—the fish form. In the *Aptenodytidae* (penguins), where the wings resemble fins, and where they, as in all other diving birds, serve as such, we have this form most strongly designated. The heavy, clumsy structure, with small wings and short legs, also makes them generally less active than other birds, and shows a lower development of the type of bird. This, however, is not the case with all the swimmers; and the order *Longipennes* gives us instances where swimmers possess a high degree of activity.

"The passerine birds (*Passeres*) seem to us to possess the highest irritability, and to be those in which the nature of birds has reached its highest development. We do not by *irritability* mean the muscular strength alone, but vivacity and activity generally. Where this is most manifold, most changing and constant, it is the most developed. We find in the *Passeres* 'the power to stay and move with ease, as well on the ground as in the trees or in the air, and to make their presence known by characteristic melodious notes.' (Sundevall.) We find them in a constant and manifold motion, and they let us constantly hear their notes, either as song or as affectionate voices. The birds of prey have generally been placed highest, and been considered the most developed, in consequence of their muscular strength

and strong flight, and their thereby supposed high degree of irritability; but by keeping them in captivity we find at once that the birds of prey are dull birds, and that they, as regards irritability, are far behind the Passeres. They remain for a long time silent and quiet, and do not generally show any activity unless they are frightened or driven by appetite for food. The passerine birds, on the contrary, are, in captivity, constantly in motion, and let us incessantly hear their lively song and affectionate voices."

In order that the descriptions of birds given in these pages may be well understood, we present an illustration and brief account of the different parts of their external anatomy.

A represents the primary quills, usually called primaries.

B represents the secondary quills, usually called secondaries.

C spurious wing.

D wing coverts.

E tertiary quills, usually called terciaries.

F represents the throat.

G is the upper part of the throat, called jugulum.

H is the bill or beak. This is divided into two parts, called the upper and lower mandibles.

I is the frons, or forehead. Feathers at this point are called frontal feathers.

J is the crown. Feathers here are called coronal feathers, and occipital.

K represents the scapular feathers.

L is the back. Feathers here are sometimes called interscapular.

M represents the tarsus; sometimes called shank or leg.

N is the abdomen.

O is the rump.

P shows the upper tail coverts.

Q indicates the position of the lower tail coverts.

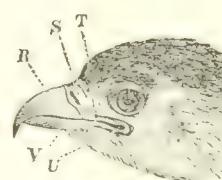
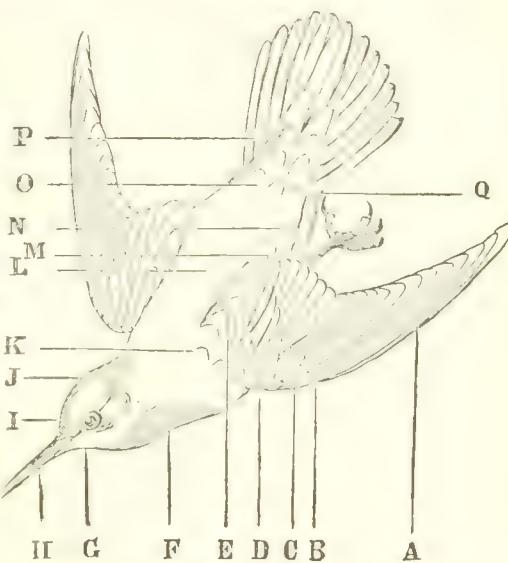
R shows on the bill the culmen, or crown, of the upper mandible.

S is the naked skin at the base of the bill, called the cere.

T shows the position of the lores between the eye and bill.

U indicates the gape, the angle at the junction of the upper and lower mandibles; the feathers in this locality are called rictal.

V is the commissure, or the folding edges of the mandibles.



In addition to these parts, there are the flanks, or sides of the bird; the pectus, or breast; the flexure, or bend of the wing; the iris, or irides, the colored circle which surrounds the pupil of the eye; and the toes and tibia. The former are sometimes palmated, as with the swimmers, or natatores; and the latter is that portion next above the tarsus, on the leg.

The following Table, identical with Lilljeborg's, gives in a condensed form the characteristics which distinguish the various primary groups of birds.

BIRDS.		Orders.
Upper part of tarsus (tibia and fibula)...	{ not free, but enclosed within the skin of First Sub-class. (1) with long base of anterior toe; (2) with short base of anterior toe.	1. PYGOPODIES.
	{ free, as well as the lower part of the femur. Base of anterior toe or hallux.	2. LONGIPENNIS.
	{ not elevated above the base of the anterior toes; the cutting edge of the femur too insinuated in the anterior toe.	3. STEGANOTODES.
		SECOND SECTION.
		4. LAMELLIROSTRES.
		1. ON BILL.
		SECOND SUB-CLASS.
	{ (1) with long base of anterior toe; (2) with short base of anterior toe.	5. GRALLAE.
	{ free, as well as the lower part of the femur.	6. BRVIPENNIS.
		7. GALLINÆ.
		SECOND SECTION.
		8. PULLASTRE.
		9. ACCIPITRES.
		10. STRISORNS.
		11. ZYGOACTYLI.
		not exceeding half the length of secondary quills. <i>Fleator longus</i> too connected with the <i>Fleator communis</i> of the anterior toes (Similevitch).
		12. PASSERES.
		not exceeding half the length of the secondary quills. <i>Apisaurus floridanus</i> of the posterior toe not connected with the <i>n. fleator communis</i> performs of the anterior toes. Claw of the posterior toe not smaller than the claw of the anterior median one.

* By insistent is meant the application of the inferior surface to the ground or object on which the foot rests. As there is no single English word to express this character, the Latin term used by Lilljeborg is adopted, modified only by an English termination.

It will be noticed in the foregoing table, that the system of Lilljeborg's is the progressive, or ascending scale, in which he begins with the *lowest* forms, and proceeds to the *highest*. In the present volume we will reverse his plan, beginning with the highest, and ending with the lowest forms. Commencing with Passeres, or perchers, then we have the following synopsis of characteristics of the different families comprehended in the passerine birds:—

First Section.	
PASSERS.* Posterior surface of tarsus covered	Apparatus for singing generally wanting
CLAMATORES. Singing apparatus	with two cornaceous entital laminae, connected at the posterior margins; provided with an apparatus for singing in the lower larynx
absent. Mandible within, excavated, towards tip.	covering also the inner side of tarsus, Upper mandible generally entire behind tip
Anterior entital of tarsus	not covering the inner side of tarsus, Upper mandible notched behind tip. Tarsus
Margins of mandibles	reticulated, only two connected at base; { serrated, all connected at base; the median and external in greater degree
Upper mandible	not reticulated, with the anterior dentelle long and slender
notched	not reticulated, with the anterior dentelle long and slender
tip. Tarsus	the external side of which are brought round to the back. Tarsi
almost plane.	{ without a tooth or dorsal plate
present. Innermost secondaries	{ produced. Claw of hind toe less arched than the others
not produced. Claw of hind toe like the others	
covered with tubular, long, and extensible. Bill generally long, slender, tenuate and acute	50. ASYRATIDAE, Sund.
neither tubular nor conical. Bill large, generally more or less conic. Tip of tarsus not crooked	51. AVIIFORMES, Sund.
longer	52. PRIMATIDAE, Bonap.
acute and inflexed. Bill stout, conic, rarely perceptibly notched behind the tip of the upper mandible	53. PRIMATIDAE, Sund.
not far from the angle of the mouth	54. PLATYRHYNCHIDAE, Sund.
wid. Mar. of tarsus	55. LORAKEETIDAE, Sund.
inflated,	56. LORAKEETIDAE, Sund.
inflated,	57. AVIIFORMES, Sund.
inflated,	58. BONYAKIDAE, Sund.
inflated,	59. TANAGRIDAE, Sund.
inflated,	60. NIGRIRAMPHIDAE, G. Gray.
inflated,	61. CORYPHIDAE, Bonap.
inflated,	62. HIRUNDINIDAE, Bonap.
inflated,	63. TANAGRIDAE, Sund.
inflated,	64. MEGALIPIPES, Bonap.
inflated,	65. HIRUNINIDAE, Bonap.
inflated,	66. PATIPE, Bonap.
inflated,	67. SYLVIIDAE, Bonap.
chiefly covered with a single entital plate. Primaries 10. No tarsus	68. PRIMATIDAE, Sund.
(more or less covered with feathers	69. PRIMATIDAE, Sund.

* The order of Passeres is here classified on the same principles as by Sundevall in his *birds of Sweden*

ORDER OSCINES (SINGING BIRDS).

FAMILY TURDIDÆ. THRUSHES.

This family comprehends the *Turdinae* (the true thrushes), which may be easily distinguished from the others, by the tarsus being covered by a single scale, giving it the appearance of being booted. The *Miminae* (the mocking thrushes), and the *Cinclinae* (the dippers), which may be known from the others by their short thick body and short, rounded, concave wings. Of the true thrushes, the robin, song thrush, and hermit thrush of America, and the blackbird, the song thrush, or mavis, the red-wing thrush, the missel thrush, the rock thrush of Europe, furnish well-known examples.

The American robin, from its distribution over this continent, and familiar habits, is one of the best known, generally, of the above-mentioned birds. It penetrates to the northern sections very early in the spring, and its beautiful, liquid song is the first to gladden the ear. It nests in orchards near houses oftener than in the woods, and a given locality is the home of the same birds for several years in succession. The nest is placed in the small branches of a tree, and is composed first of a thick layer of straw, weeds, roots, and mosses. On this is built a thick shell of mud, in which are mixed pieces of grass and roots, and in this shell the nest proper—which is composed of soft grass and other fine material—is placed. The eggs are usually four in number; their color is a beautiful greenish-blue, like the color of the eggs of nearly all our true thrushes. Two, and sometimes three broods are reared in a season. Probably none among our birds has caused more discussion relative to the injury done to small fruit growers than the robin, and a brief review of its habits as regards its agricultural importance, will not be out of place here.

The fact that this bird has been detected in grape-stealing, that he is a universally known cherry-lover, and that strawberries, and blackberries, and other small fruits pay a heavy tribute to his and his family's appetites, have characterized him as a thief, a pest, and nuisance, that should be suppressed and abated on every possible occasion. "Give a dog a bad name, and hang him," is unfortunately the rule which governs too many of us humans; but with our national and notorious love of justice, we should see that the animal does not undeservedly bear the bad name before he is hung.

No animal should be classed as a pest unless it is unquestionably more mischievous than beneficial. A rat is a pest, since he has none, or, at any rate, very few redeeming qualities to offset all of his very many bad ones.



THE AMERICAN GOLDFINCH



THE MOCKING BIR



THE MEADOW LARK OF AMERICA



THE AMERICAN ROBIN

But the robin is altogether a different creature ; and we, setting aside our natural love for the bird, and denying *in toto* all sentimentality, assert that, so far from being a pest, he is, generally speaking, beneficial, by his food and mode of living, and is certainly worthy of a fair trial before the "bad name" and its attendant hanging are apportioned unto him.

Undoubtedly to the grower of small fruits the robin is mischievous, and sometimes seriously so. But the interests of small fruit growers are very few when compared with the general interests of broad agriculture. Of course, if there were even the remotest danger of the suspension of the former ; if grapes, and strawberries, and cherries were likely to fail us because of the ravages of these birds, we would be among the last to enter a plea for them ; but fortunately there is no danger. They will probably pilfer all fruit that is accessible to them in many localities, and will continue, as heretofore, to pay in labor for the fruit stolen.

Were the robin simply injurious to fruit growers, there would be a larger share of justice in the complaint against him. But the bird makes no choice between one man and another, laboring zealously in the service of all, and that, too, from the beginning to the close of the year, in seasons when other fair-weather birds have abandoned us for more genial climates.

To show that a large proportion of the robin's operations are beneficial, we would present in a condensed form the results of an investigation, published in the United States Agricultural Report for 1867, which were made on the food of this species, by examination of specimens from various localities in the country, and killed in different periods of the year. We found, in examining specimens killed in January and February, that the different individuals contained in their alimentary canals food, composed, on the average, of nearly the following proportions : barberries, two twelfths ; seeds, three twelfths ; insects and larvæ, three twelfths ; cedar berries, four twelfths. We can readily see that during these months the food of the robin must necessarily be meagre ; and although a few insects are obtained, the greater part of the food must consist of wild seeds and berries, which are, of course, valueless on the farm. Allowing a portion of the insects captured to be beneficial, and assuming days as a proportion of months to represent the comparative beneficial, injurious, and neutral labors, we find that in these months the bird is beneficial about twenty-one days by destroying noxious insects, injurious four and one fifth days by destroying beneficial insects, and neutral thirty-three and four fifths days. Its food consisting, in this last proportion, of useless seeds and berries. Through March, April, and May, we found from the same source that it is beneficial sixty-four and a half days, injurious nine and a half days, and neutral forty-eight days.

In July we found that it is less beneficial than injurious. It is now that many of the small fruits are ripe, and the young birds are out of the nest, and subsisting, in a great measure, upon these for a diet. We found, from many localities, that the food consists, in all ages, on the average, of the following parts: cherries, four tenths; earth-worms, two tenths; caterpillars and grubs, two tenths; berries, two tenths. But it is to be remembered that in this month a second brood of young robins is often hatched, which is fed for a long time, certainly a fortnight, almost exclusively upon insect food, and the old birds therefore cannot be considered as injurious to the degree above-mentioned. For the sake of fairness then, we will consider that in July the robin is beneficial nine, injurious eighteen, and neutral four days. Through the balance of the year the food exhibits the greatest variety, but a liberal margin will allow the bird to be beneficial forty-eight days, injurious twenty-eight, and neutral seventy-six days.

In a general summary of the above brief analysis, we find that the robin is beneficial one hundred and forty-two days, injurious sixty days, and neutral about one hundred and sixty-three days.

It has been said against the robin, that although it feeds its young upon insects, the greater proportion of its food consists of earth-worms, which are, in a measure, beneficial. But this accusation is hardly justified by fact, for in June and July, when the young birds are fed by the parents, the surface of the soil has become so dry that earth-worms are down deep in the moist earth, beyond the reach of the bird, and cut-worms and other terrestrial larvæ are really the insects captured. We have had several opportunities for noticing this fact. A pair of robins, which had nested in an elm tree near the house in which we were residing, paid constant visits to a lawn near by. At all times of the day one or the other of the birds was on the ground, sometimes both together. They hunted their food in the manner peculiar to their race, hopping a few steps, then pausing to scan the ground, and discover the lurking-place of the grubs, their food. The instinct with which they ascertained the presence of the larvæ was wonderful, and we never could detect the signs that guided them.

In the midst of their hopping run they would stop instantly, or turn abruptly from their course, and, with a quick peck, sometimes several scratching strokes of the bill, remove the grass and earth, seize the grub, and bear it away to their nestlings. On no occasion did we see the birds remove the soil from above the cut-worms by scratching with their feet, although they often dug down to the depth of perhaps an inch with their beaks. This pair of birds destroyed, by actual count, twenty-four and twenty-seven grubs (cut-worms) in the lapse of one hour; and on another occasion, twenty-six and thirty of these insects in the same period. All

these worms were fed to the young birds, which received, so far as we noticed, no other aliment.

On another occasion we watched a pair of robins in feeding their young, and saw them in an hour's time carry to their family of four, over forty cut-worms and smooth caterpillars, and, we believe, a very few earth-worms. Such appetites and powers of digestion in birds but half-grown seem almost incredible; but we must remember that these larvæ and worms are composed almost entirely of juices, and their assimilation is comparatively an easy matter.

Looking at the utility of the robin, in a simply practical view then, it appears to us, from the above facts, that this bird is eminently useful, and worthy of encouragement and protection. We cannot expect to receive any rose without its attendant thorn, and that the good services of the robin should be hoped for without expecting that he may exact a certain share of the fruits of his labors, is unreasonable and unfair.

Our Song, or Wood Thrush, is one of the most beautiful of our wood birds. It is distributed very generally throughout our continent, from Massachusetts on the north-east, to the Missouri River on the west; and while breeding in the north, it passes the winter in the Gulf States and Central America. It arrives in the latitude of New England, from the South, about the 10th of May, both sexes making their appearance at about the same time. They soon commence pairing, and frequent the moist thickets and thickly wooded glens, where their amours are conducted in privacy and peace.

At this season the beautiful song of the male is heard at early dawn and early twilight. It seldom sings in the middle of the day, unless the weather is dark and cloudy. This song is a beautiful, melancholy strain, similar to the tone produced on a flute; the notes are difficult of description. Mr. Nuttall, who was particularly happy in his descriptions of bird-songs, speaks of this as follows:—

"The prelude to this song resembles almost the double-tonguing of the flute, blended with a tinkling, shrill, and solemn warble, which reëchoes from his solitary retreat like the dirge of some sad recluse, who shuns the busy haunts of life. The whole air consists usually of four parts, or bars, which succeed, in deliberate time, and finally blend together in impressive and soothing harmony, becoming more mellow and sweet at every repetition. Rival performers seem to challenge each other from various parts of the wood, vying for the favor of their mates with sympathetic responses and softer tones. And some, waging a jealous strife, terminate the warm dispute by an appeal to combat and violence. Like the robin and the thrasher, in dark and gloomy weather, when other birds are sheltered and silent, the clear notes of the wood thrush are heard through the dropping woods, from

dawn to dusk; so that, the sadder the day, the sweeter and more constant is his song. His clear and interrupted whistle is likewise often nearly the only voice of melody heard by the traveller to midday, in the heat of summer, as he traverses the silent, dark, and wooded wilderness, remote from the haunts of men. It is nearly impossible by words to convey any idea of the peculiar warble of this vocal hermit; but, among his phrases, the sound of *'airree*, peculiarly liquid, and followed by a trill, repeated in two separate bars, is readily recognizable. At times their notes bear a considerable resemblance to those of Wilson's thrush; such as *eh rhehu 'vrhehu*, then varied to *'eh villia villia*, *'eh villia vrhehu*, then *'eh velu villu*, high and shrill."

About the 20th of May the song thrush builds its nest. This is placed usually in a low alder or birch shrub, in a retired locality, almost always in the deep woods. It is composed outwardly of grass, leaves, and weeds, bent and twined together. In this is built a nest composed of mud and grass, and the whole is lined with fibrous roots and soft grass and moss. It is placed on a low branch of a tree, or in the branches of a shrub.

"The favorite haunts of the wood thrush are low, thick-shaded hollows, through which a small brook or rill meanders, overhung with cedar-bushes that are mantled with wild vines. Near such a scene, he generally builds his nest in a laurel or alder bush. Outwardly, it is composed of withered beech leaves of the preceding year, laid at bottom in considerable quantities, no doubt to prevent damp and moisture from ascending through, being generally built in low, wet situations. Above these are layers of knotty stalks or withered grass, mixed with mud, and smoothly plastered, above which is laid a slight lining of fine black fibrous roots of plants."

The eggs are usually four in number. They are of a uniform light-blue color, without spots, and with a very slight tint of green. Their form is rather long and pointed. Their dimensions are about 1.12 by .68 inch.

Of the Song Thrush of Europe, we present from the Museum of Animated Nature the following account:—

"This splendid songster is common over the greater portion of Europe, being migratory in Norway, Sweden, and the northern districts, but stationary in England and in France, Italy, and other parts of the south. As the winter advances, flights of thrushes arrive in Great Britain, with a north or north-east wind, and after staying a few days to recruit, move southwards."

The thrush is a hardy bird, and begins to enliven the woods and glens with his rich-toned notes even as early as the month of January, if the season be temperate, and pairs, and commences the work of nidification in March. The nest is generally in a thick bush, amidst clustering ivy, or closely-tangled

bowers of dog-roses, in woods or in full evergreens, as the Portugal laurel or holly. Externally it is composed of bent twigs, moss, and grass, closely interwoven, being plastered within with a very thin, smooth layer of rotten-wood, cemented by glutinous saliva, and laid as a coating, or fine cement, upon a thick layer of cow-dung, scarcely carried so high as the brim of the nest. This lining is water-proof and tough, and well calculated for protecting the eggs or young from the keen winds of early spring. Two broods are produced yearly. Worms, snails, slugs, insects, and berries constitute the food of the thrush. The common garden snail (*Helix hortensis*) and the wood snail (*Helix nemoralis*) are greedily devoured, the bird beating the shell against a stone till it is completely broken and the contents are disengaged.

The Blackbird, one of the most melodious of the singing thrushes of Europe, is a shy bird, frequenting hedge-rows, thickets, shrubberies, and large gardens, and when disturbed or surprised, escapes into the covert of dense foliage, uttering a loud, sharp cry of alarm. Its song is clear and melodious, but not so varied as that of the song thrush. Like that bird, it feeds upon slugs, shelled snails, and insects, and also upon currants, cherries, peas, &c., more than compensating, however, for its mischief by the destruction of noxious slugs and insects. Early in spring the blackbird begins its nest; a thickset hedge-row, an insulated bush of some dense evergreen, or a bower of ivy, are all favorite places. The outer framework of the nest consists of moss, small sticks, grasses, and fibres, with an inner coat of mud plaster, over which is a lining of fine dry grass. The eggs are four or five in number, of a bluish green, variegated with darker markings. Two and even three broods are hatched and reared during the spring and summer.

The female of this species is brownish-black above, the breast being pale amber brown, the margin of each feather passing into grayish-white; bill and legs blackish-brown. The young are similar to the females, and the males do not acquire their glossy black and orange-yellow bill till after the second moult. White and cream-white varieties, and albinos are sometimes met with.

Instances are on record of the power of this bird to imitate the cry or song of other birds. Mr. Bouchier relates the following in the Magazine of Natural History for September, 1831:—

"Within half a mile of my residence (Wold Rectory, near Northampton) there is a blackbird, which crows frequently and as accurately as the common cock, and nearly as loud; as it may, on a still day, be heard at the distance of several hundred yards. When told of the circumstance, I conjectured that it might be the work of a cock pheasant, concealed in a neigh-

boring brake; but, on the assurance that it was nothing more or less than a common blackbird, I determined to ascertain the fact with my own eyes and ears; and this day I had the gratification of getting close to it, seated on the top bough of an ash tree, and pursuing with unceasing zeal its unusual note. The resemblance to the crow of the domestic cock is so perfect, that more than one in the distance were answering it. It occasionally indulged in its usual song, but only for a second or two, resuming its more favorite note; and once or twice it commenced with crowing, and broke off in the middle into its natural whistle. In what way this bird has acquired its present propensity I am unable to say, except that, as its usual haunt is near a mill where poultry are kept, it may have learned the note from the common fowl."

Of the Mocking Thrushes, our American Mocking Bird (*Mimus polyglottus*) is the most celebrated, and that most justly, for his song is unrivalled. Attired in a suit of dark ash-colored coat above, and lighter gray waistcoat beneath, he puts to shame, by the wonderful power and variety of his notes, all his more gaudily arrayed neighbors of the wood.

The following exceedingly interesting account of this species is by Alexander Wilson:—

"The precise time at which the mocking bird begins to build his nest varies according to the latitude in which he resides. In the lower parts of Georgia he commences building early in April, but in Pennsylvania rarely before the 10th of May; and in New York, and the States of New England, still later. There are particular situations to which he gives the preference. A solitary thorn bush, an almost impenetrable thicket, an orange tree, cedar or holly bush, are favorite spots, and frequently selected. It is no great objection with him that these happen, sometimes, to be near the farm or mansion-house. Always ready to defend, but never over-anxious to conceal his nest, he very often builds within a small distance of the house, and not unfrequently in a pear or apple tree; rarely at a greater height than six or seven feet from the ground. The nest varies a little in different individuals, according to the conveniency of collecting suitable materials. A very complete one is now lying before me, and is composed of the following substances: first, a quantity of dry twigs and sticks; then, withered tops of weeds of the preceding year, intermixed with fine straws, hay, pieces of wool and tow; and lastly, a thick layer of fine fibrous roots, of a light-brown color, lines the whole. The eggs are four, sometimes five, of a cinereous-blue, marked with large blotches of brown. The female sits fourteen days, and generally produces two broods in the season, unless robbed of her eggs, in which case she will even build and lay the third time. She is, however, extremely jealous of her nest, and very apt to forsake it if much

disturbed. It is even asserted by some of our bird dealers, that the old ones will actually destroy the eggs, and poison the young, if either the one or the other have been handled. But I cannot give credit to this unnatural report. I know, from my own experience at least, that it is not always their practice; neither have I ever witnessed a case of the kind above mentioned. During the period of incubation, neither cat, dog, animal, nor man can approach the nest without being attacked. The cats, in particular, are persecuted whenever they make their appearance, till obliged to retreat. But his whole vengeance is most particularly directed against that mortal enemy of his eggs and young, the black snake. Whenever the insidious approaches of this reptile are discovered, the male darts upon it with the rapidity of an arrow, dexterously eluding its bite, and striking it violently and incessantly about the head, where it is very vulnerable. The snake soon becomes sensible of its danger, and seeks to escape; but the intrepid defender of his young redoubles his exertions, and, unless his antagonist be of great magnitude, often succeeds in destroying him. All its pretended powers of fascination avail it nothing against the vengeance of this noble bird. As the snake's strength begins to flag, the mocking bird seizes and lifts it up partly from the ground, beating it with his wings; and when the business is completed, he returns to the repository of his young, mounts the summit of the bush, and pours out a torrent of song in token of victory.

"The plumage of the mocking bird, though none of the homeliest, has nothing gaudy or brilliant in it, and had he nothing else to recommend him, would scarcely entitle him to notice; but his figure is well proportioned, and even handsome. The ease, elegance, and rapidity of his movements, the animation of his eye, and the intelligence he displays in listening and laying up lessons from almost every species of the feathered creation within his hearing, are really surprising, and mark the peculiarity of his genius. To these qualities we may add that of a voice full, strong, and musical, and capable of almost every modulation, from the clear, mellow tones of the wood thrush to the savage scream of the bald eagle. In measure and accent he faithfully follows his originals. In force and sweetness of expression he greatly improves upon them. In his native groves, mounted on the top of a tall bush or half-grown tree, in the dawn of dewy morning, while the woods are already vocal with a multitude of warblers, his admirable song rises pre-eminent over every competitor. The ear can listen to *his* music alone, to which that of all the others seems a mere accompaniment. Neither is this strain altogether imitative. His own native notes, which are easily distinguishable by such as are well acquainted with those of our various song birds, are bold and full, and varied seemingly beyond all limits. They consist of short expressions of two, three, or at the most five or six syllables, generally inter-

spersed with imitations, and all of them uttered with great emphasis and rapidity, and continued with undiminished ardor for half an hour or an hour at a time. His expanded wings and tail, glistening with white, and the buoyant gayety of his action, arresting the eye, as his song most irresistibly does the ear, he sweeps round with enthusiastic ecstasy. He mounts and descends as his song swells or dies away; and, as my friend Mr. Bartram has beautifully expressed it, 'he bounds aloft with the celerity of an arrow, as if to recover or recall his very soul, expired in the last elevated strain.'* While thus exerting himself, a bystander, destitute of sight, would suppose that the whole feathered tribes had assembled together on a trial of skill, each striving to produce his utmost effect, so perfect are his imitations. He many times deceives the sportsman, and sends him in search of birds that perhaps are not within miles of him, but whose notes he exactly imitates; even birds themselves are frequently imposed on by this admirable mimic, and are decoyed by the fancied calls of their mates, or dive with precipitation into the depth of thickets at the scream of what they suppose to be the sparrow-hawk.

"The mocking bird loses little of the power and energy of his song by confinement. In his domesticated state, when he commences his career of song, it is impossible to stand by uninterested. He whistles for the dog; Caesar starts up, wags his tail, and runs to meet his master. He squeaks out like a hurt chicken, and the hen hurries about, with hanging wings and bristled feathers, clucking to protect its injured brood. The barking of the dog, the mewing of the cat, the creaking of a passing wheelbarrow, follow with great truth and rapidity. He repeats the tune taught him by his master, though of considerable length, fully and faithfully. He runs over the quiverings of the canary, and the clear whistlings of the Virginia nightingale or red bird, with such superior execution and effect, that the mortified songsters feel their own inferiority, and become altogether silent, while he seems to triumph in their defeat by redoubling his exertions.

"This excessive fondness for variety, however, in the opinion of some, injures his song. His elevated imitations of the brown thrush are frequently interrupted by the crowing of cocks; and the warblings of the bluebird, which he exquisitely manages, are mingled with the screaming of swallows or the cackling of hens. Amidst the simple melody of the robin, we are suddenly surprised by the shrill reiterations of the whippoorwill; while the notes of the killdeer, blue jay, martin, Baltimore, and twenty others, succeed with such imposing reality, that we look round for the originals, and discover, with astonishment, that the sole performer in this singular concert

* Travels, p. 32. Introd.

is the admirable bird now before us. During this exhibition of his powers he spreads his wings, expands his tail, and throws himself around the cage in all the ecstasy of enthusiasm, seeming not only to sing, but to dance, keeping time to the measure of his own music. Both in his native and domesticated state, during the solemn stillness of night, as soon as the moon rises in silent majesty, he begins his delightful solo, and serenades us the livelong night with a full display of his vocal powers, making the whole neighborhood ring with his inimitable medley."

Among the *Miminae* is also included the Cat Bird. This, one of the least-liked, soberest-plumaged, modesty-possessed of all our birds, is generally well known in all sections of the continent east of the Missouri River, from the Canadas to the Gulf States. It is distributed in the Middle and Northern States as a summer resident, arriving in New England and its latitude from the 5th to the 15th of May.

We have said that this bird is not liked by most people; but the more attention we have given to the species, the more we are persuaded that this prejudice against it is unjust and uncalled for. As soon as the cat bird arrives in our groves and thickets, we are informed of the fact by its coyish flittings through the newly-opened foliage, its grotesque motions, as it peers at us as we pass near its sylvan home, and by its song, which it utters in spring from early morn to dewy eve, sometimes several individuals in the same thicket contesting in tuneful emulation.

We have often paused to listen to one of these songsters, and have been undecided, and are to this day, as to whether its notes were imitations of scraps of songs of other birds, as most authors affirm, or its own effusions. The bird perches on the topmost branch of a low tree or shrub, usually in or near a swamp, and with its head elevated, its wings slightly drooping, its tail straight beneath, it pours forth a warbling soliloquy, made up of a succession of soft, listless notes, then a little trill, then a kind of chatter, then the trill again, followed by the prelude, the whole forming an exceedingly pretty and sweet medley. These notes are so like those of many other birds that we cannot wonder that observers speak of them as being imitations; but every individual cat bird has a similar song with his neighbor, each being a pleasant little reverie uttered by the bird, just as we whistle or hum a snatch of this air or another as we walk along, without caring or thinking what the music is. In addition to this song, the cat bird has a cry so exactly similar to that of a kitten, that if one who is unacquainted with the bird hears it, he can hardly be persuaded that it is not uttered by one of those animals, which has wandered off into the bushes. And it is perhaps this note that has caused the bird to be disliked. A schoolboy, "just let loose from school," hearing a cry, as if his favorite kitten is calling to him, pene-

trates a brier thicket, to the detriment of his clothes and skin, only to find that the supposed kitten is nothing but a bird which has imposed upon him. Now, "as the twig is bent, so is the tree inclined;" as the impressions made on us when children are always the most permanent and strong, the discovery of the imposition on the schoolboy is the seed from which grows the prejudice of the man; and we can trace the impulse which prompts many a countryman to throw a stone "at a hateful cat bird" which happens to cross his path, to a dislike which he took to it in his younger days.

Early in the morning and late in the afternoon, and during cloudy and foggy days, seem to be the favorite times for song; but the cat bird's notes are heard in our pastures, woods, and fields at almost all hours of the day, from the time of the bird's arrival until early August.

The alarm note is different from that of all our other birds. It is composed of several syllables, like "*trat—tat—tat—tat*," uttered very quickly, sounding like the breaking of several twigs, or small sticks, in quick succession. This alarm is given at the appearance of danger; and when it is heard, every bird within hearing dives into the thicket, away from sight. The birds commence building about the 20th of May to the first week of June. The nest is usually placed in shrubs and low trees, seldom more than four or five feet from the ground. The location is as often in the deep woods as in the pastures and more open neighborhoods. The structure is made of first a layer of twigs and sticks, on which is built the body of the nest, which is composed of strips of grape-vine bark, fine twigs, leaves, and straws. It is pretty well hollowed, and is lined with fibrous roots and hairs, and sometimes fine grass. The eggs are usually four in number, sometimes five. Their color is a bright, deep emerald green, and their average size about nine tenths of an inch in length by about seven tenths of an inch in breadth. Two broods are often reared in a season. Perhaps none of our birds show a greater solicitude for the safety of its own, or its neighbor's young, than this. If we pass near its nest, the old birds fly before us with many remonstrances and cries of alarm; and peace is not restored in the thicket until we have taken our departure.

We have often, when wandering in the woods, imitated the cry of young birds by pressing our lips to a piece of glass, or the back of our hand, and forcibly drawing in the air. The cat birds were always the first to make their appearance; and flying in our face, they scolded and fumed in no gentle manner. They seemed almost crazy with emotion, and we could not continue their distress.

The food of this bird consists of seeds, worms, various insects which it captures on or near the ground, and different berries and small fruits. We have seen one chasing a flying insect, but it met with poor success.

At about the middle of October the eat birds begin to move on their southern migration ; and before we have any very heavy frosts none of them are to be met with in the northern pastures and woods.

The *Cincline* (dippers) are a curious and interesting group, of which there are three species on this continent, and several in Europe and Asia. The species best known is the Water Ouzel (*Cinclus aquaticus*) of Europe. This bird is spread over the greater portion of Europe, but is more rare in the northern regions than in the British islands and the south. It is amidst romantic and picturesque scenery, where mountain streams and rivulets, winding through glens and rock-girt dales, sparkle over a rocky bed, that this active and elegant little bird is found. It is nervous, restless, and full of animation. Its movements are all quick and alert, and it flits from stone to stone, flying low and rapidly over the bubbling water. Often may it be seen perched on a portion of rock jutting out of the water in the centre of the stream, and there, conspicuous by its snowy breast, contrasted with the deep russet-brown of the rest of its plumage, it will remain for a short time dipping its head and jerking its tail in an odd manner, reminding us forcibly of the wrens. In an instant it will disappear, diving beneath the water, and emerging at a considerable distance, again settle on some stone or crag, and utter a low, but very sweet and pleasing strain. Again it will dive or fly off to another resting-place, jerk its tail and sing, dipping and moving its head, and again start off to another resting-place, jerk its tail and sing, dipping and moving its head, and again start off to a new resting-place. Its song is uttered in bright mornings during winter as well as in the spring and summer, and it exhibits equal animation, entering the water, and flitting from stone to stone, in the cold and in the warmer months. How this bird manages to keep itself submerged, and proceed at the bottom of the stream, is not very well understood. An English writer says, "On the 26th of September, a pair of water ouzels at the upper pond of Wolfhill (near Belfast) plunged several times into the water, which was some feet deep, and remained moving about in it with only their heads above the surface. Twice one of them disappeared altogether for a few seconds ; they then pursued each other round the pond, and alighted, when one of them sang, and they repeated over again several times all these manœuvres."

The food of the water ouzel consists of insects, aquatic larvæ, minute fresh-water shells, and the fry of fishes. The nest of the bird is most artfully concealed. It is sometimes placed in the fissure of a low jutting crag, overhanging the rushing and bubbling current, often between the green damp stones of a rude bridge. The nest is composed of intertwined mosses, and is of a large size, and domed, with a small lateral aperture leading to the interior chamber, which is lined with a few dried leaves. Sometimes it is so

placed that the sheet of water falling from an elevated rock, and forming a cascade, completely screens it; but wherever situated, it blends with the rest of the moss and lichen which fill up every chink, and spread over the face of the humid rocks in great luxuriance, and unless the bird is watched to its retreat, would never be detected.

As soon as the young are fledged they accompany their parents, following them in all their movements, playfully sporting, diving, flitting from stone to stone, and performing the most amusing evolutions. On the continent of Europe the water ouzel is very common in Switzerland and in the rocky parts of Italy. This species is about seven inches in length; the upper parts are of a deep brown, the throat and chest white, the under parts rusty, iris pearl gray, bill black, legs bone colored. In the young the plumage above is clouded with blackish undulations, and the white feathers of the chest are finely variegated with brown and ash color. Recent classification in ornithology has separated from the Turdidae the Saxicolas, and raised them to the position of a family, called the Family SAXICOLIDÆ (the rock inhabitors). These birds are distinguished as follows: wings very long and much pointed, reaching beyond the middle of the short square or emarginated tail, and one and a half times or more the length of the latter; the spurious primary very short, the second quill longer than the fourth; in the closed wing the outer secondary reaches only about two thirds the length of the longest primary.

In this group are included our well-known Bluebird, the Robin-redbreast of Europe, the Whinchat, and the Wheat-ears.

The American Bluebird (*Sialia sialis*) is six and three fourths inches long. The whole upper plumage is of a rich sky-blue color, the breast chestnut, and the plumage of the abdomen is white. It is a summer bird in the United States, coming with the earliest spring, and retiring to the south in the autumn. Its food consists of insects and spiders in the summer, and berries in the winter. The eggs are from four to six in number; their color is a pale blue. Wilson says of this species,—

"The usual spring and summer song of the bluebird is a soft, agreeable, oft-repeated warble, uttered with open, quivering wings, and is extremely pleasing. In his motions and general character he has great resemblance to the robin redbreast of Great Britain, and had he the brown olive of that bird instead of his own blue, could scarcely be distinguished from him. Like him he is known to almost every child, and shows as much confidence in man by associating with him in summer as the other bird in winter. He is also of a mild and peaceful disposition, seldom fighting or quarrelling with other birds. His society is courted by the inhabitants of the country, and few farmers neglect to provide for him, in some suitable place, a snug little



THE SONG-THRUSH OF EUROPE



THE EUROPEAN SKYLARK



THE MEADOW BIRD OF EUROPE

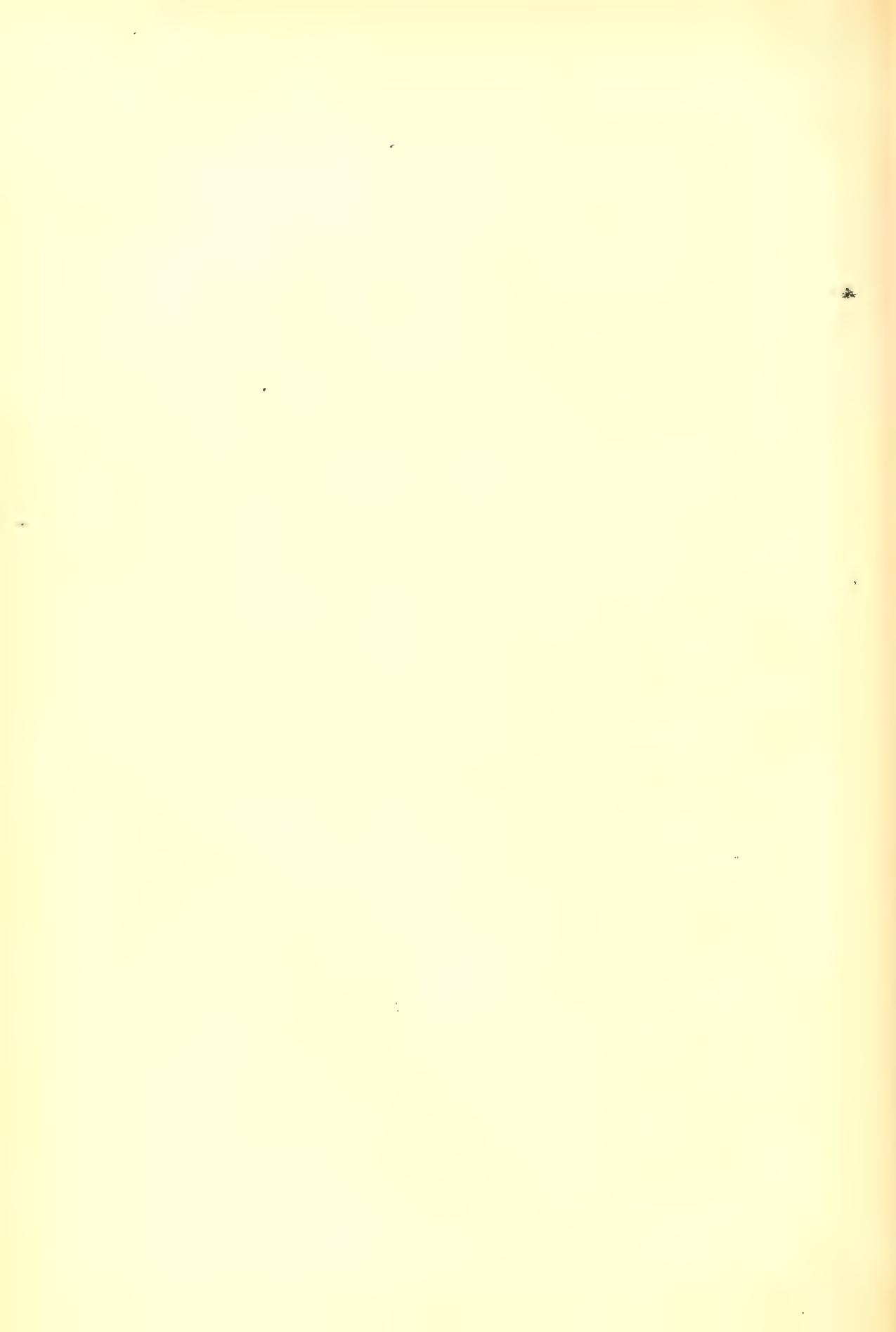


THE NIGHTINGALE OF EUROPE



THE ROBIN REDBREAST OF EUROPE





summer-house, ready fitted, and rent free. For this he more than sufficiently repays them by the cheerfulness of his song, and the multitude of injurious insects which he daily destroys. Towards fall, that is in the month of October, his song changes to a single plaintive note, as he passes over the yellow, many-colored woods, and its melancholy air recalls to our minds the approaching decay of the face of nature. Even after the trees are stripped of their leaves, he still lingers over his native fields, as if loath to leave them. About the middle or end of November few or none of them are seen; but with every return of mild and open weather we hear his plaintive note amid the fields, or in the air, seeming to deplore the devastations of winter. Indeed, he appears scarcely ever totally to forsake us, but to follow fair weather through all its journeyings till the return of spring."

Of the Robin Redbreast of Europe much has been written, and its history is so well-known that we will not devote our space to it. Care must be taken not to associate it, in speaking of robins, with our American robin (*T. migratorius*), as the latter bird belongs among the thrushes proper, the other with the Saxicolas. Of the Wheat-Ears, probably the best known is the Common Wheat-Ear, or Stone-Chat (*Saxicola Lanthe*). This is a bird of passage, widely spread, during the spring and summer, over the whole continent of Europe. Everywhere it resorts to wide, open downs, sheep-pastures, and commons, scattering in pairs over the country, for the purpose of breeding, and collecting in vast flocks during the autumn, which gradually migrate southwards.

The Wheat-Ear trips along over the grass with great alertness, and its flight, which is low, is smooth and rapid. The male has a soft, sweet warble, which is often uttered while on the wing. According to Mr. Sweet, a specimen kept in captivity sang by night as well as by day, and in winter as well as through the summer months, the notes being in the former season the most varied. The nest of the wheat-ear is composed of dried roots, grasses, feathers, and fur, and is concealed with great care, so as to be not easily detected. It is sometimes placed under the shelter of a turf or stone, among the fissures of old walls or stone quarries, in the deep crevices of rocks, or in deserted rabbit burrows. The eggs, five or six in number, are of a greenish-blue.

FAMILY REGULID.E. THE KINGLETS.

The characteristics of this group have been given on a preceding page; our Ruby-crowned and Golden-crested Wrens, or Kinglets, are well-known representatives. These little birds, which, with the exception of our humming birds, are the smallest of our feathered friends, are extremely neat and pretty in their plumage, and interesting in their habits.

The Ruby-Crown is quite a common spring and autumn visitor in New England and its latitude, arriving from the south from April the 13th to the 20th in the different States. They are generally first seen in evergreen woods, but later are found among the opening foliage and blossoms of forest and orchard trees, particularly the oak, elm, maple, and apple, darting about, climbing on the small twigs, and prying in all directions in search of minute flying insects, their eggs and larvæ, frequenting the tops of the trees as well as the lower branches. By the 12th of May they depart for the north to rear their young, breeding in Canada, Labrador, &c. From about the first of October to the last of that month they are again with us, and are seen diligently engaged in pursuit of food in our woods and orchards.

They are not shy in their habits, and will permit one to approach quite near them. We have noticed that they remain in one cluster of twigs until it is completely cleared of insects, and they often employ several minutes in searching it completely.

The Ruby-Crown winters in the more Southern States of the Union, and in Mexico. On clear, fine days in spring, we have heard this bird warble a beautiful song; and it has also a peculiar guttural, querulous call-note, which often precedes this song.

The Golden-crested Wren is also a common bird, coming to us from the north the last of September, but, unlike the preceding, braving the rigors of our winter; and it leaves again by the 15th of April. Numbers, however, winter in the south; and it is in spring and autumn that the species is most abundant. On their arrival in autumn, they frequent orchard trees, feeding among the leaves of the apple trees, which, at this season, are infested with insects. Later, and in winter, they resort more often to the evergreens, such as the pine, spruce, and cedar, but rove wherever they can find food, generally in company with the chickadees, and occasionally the white-breasted nuthatch, brown creeper, and downy woodpecker—the whole forming a lively, busy winter party, as they move about the country, intent on gathering their now scanty food. Their call-note at this season, indeed the only note that we have heard at any time, is a faint pipe or whistle, sounded quickly three or four times. We have never heard this bird utter the querulous note assigned to it by Audubon and Nuttall, but have often heard the ruby-crown give this strain. In spring, having similar habits and diet with the ruby-crowns, they frequent the same hunting-grounds, and are seen hanging to the extremities of twigs, head downwards, and sometimes fluttering in the air in front of them, seizing small flies, "and often exposing the golden feathers of their head, which are opened and shut with great adroitness." The Ruby-Crown is only a little over four inches in length; is

dull olive-color above, grayish-white beneath; on the crown a patch of bright scarlet. The golden-crowned wren is a little smaller, with brighter colors, and its crest is a brilliant golden color.

FAMILY SYLVID.E. SYLVIAN.S.

In this family are included the *Sylvinæ* (the Old World Warblers), the *Laninæ* (the Shrikes), and the *Muscicapinæ* (the Flycatchers). These birds are distinguished by the following characters:—

<i>SYLVID.E.</i>	{ broad and depressed at base. Feet very small	<i>MUSCICAPIN.E.</i>
Bill	{ compressed. Feet moderately large and strong, deeply notched behind the hooked tip of the mandible	<i>LANIN.E.</i>
large. Bill	{ moderate, subulate, emarginated behind the tip of the mandible	<i>SYLVIN.E.</i>

Of the group *Sylvinæ*, the most familiar example is the Nightingale of Europe. This bird, so plainly attired in tawny brownish-gray above and grayish-white beneath, is well known as one of the most splendid of songsters.

A recent writer in "Once a Week" gives us the following interesting description of the bird and its habits:—

"HABITS OF THE NIGHTINGALE.—It is not wonderful that fables should have arisen concerning the nightingale, for there are mysteries connected with his appearance and departure which the most searching investigations of modern science have not yet explained. He comes among us very suddenly about the 14th or 15th of April; punctual almost to the day. His plumage, so fresh, so unruffled, in every way so perfect, that a long flight over hundreds of leagues of land and sea appears highly improbable. It has been noticed too, that when captured immediately after his first appearance, he has a slight pleasant odor of earth freshly dug, or after a summer shower. One might thence imagine that, like some of our beautiful moths, he has just emerged from a deeply-buried chrysalis; added to which, his extraordinary fearlessness of man for the first few days after his advent, which renders his capture so easy, might lead the fanciful to picture him to themselves as a newly-formed creature, as yet unaware that man was a natural enemy.

"So bold is he on his first arrival that if a portion of the earth be freshly raked over, or turned with a spade by one of those bird-catchers, who each season make a trade of capturing nightingales, these birds will immediately approach the place to seek for insects ere the hunter is scarcely out of sight; and if, close to the new turned earth, a 'clasp net' has been baited with the irresistible attraction of a meal-worm, the capture of the unsuspecting victim is certain. Last season I was much annoyed by seeing one of these bird-catchers leaving the woods round Pinner with seventy male nightingales so captured, just at the time that every copse in the neighborhood was beginning to resound with their enchanting music.

"In order to account for the smell of fresh earth about the plumage, and the perfectly unruffled state of the flight feathers, it has been conjectured that this interesting bird hibernates, by burying itself in the ground; but there are many unanswerable arguments against this theory. For instance, it is known that in the south-eastern islands of the Mediterranean Sea, in Asia Minor, and the north of Africa, the nightingale is found throughout the winter; so that he does not hibernate at all, in the generally accepted meaning of that term.

"Another nightingale mystery is the capricious character of his distribution during his summer appearance in northern and western Europe. It might be imagined that coming from warmer climates he would seek the mildest portion of our island, and that Devonshire and Cornwall would be his most favorite localities. But such is not the case. In the eastern portion of England he locates himself as far north as Durham, while in many of the midland counties his presence is unknown. To account for this seeming discrepancy, it has been conjectured that, coming over from the Continent at the narrowest part of the Channel, he directs his course according to the situation of districts abounding in wood and water, where alone the usual food he requires is to be found in sufficient quantity; so that a bare range of down-like hills, or a country in which small watercourses are rare, may at once stop his progress in such a direction. That he travels to us from south-east is the more probable conjecture, as in the south of France he appears ten days earlier than with us, and in southern Italy even in the middle of March. This seems to prove that the tide of emigration follows the first expansion of the spring leaves, and the simultaneous appearance of many kinds of insects which form his food. Aristotle and Pliny both notice that his first notes are heard at the moment that the first spring leaves appear, and add, that he then sings ten days and nights without intermission. This is true only to a certain extent, for he continues in song during the whole of May and the greater part of June; but it is only at first that we hear the proud and passionate burst of the love-song that has inspired the poets. It is in the days preceding the pairing time, and those of the season of 'courtship,' that he puts forth his greatest brilliancy and his loudest vocal powers; the melodies of his 'married life' being of a calmer character, though still far above any other music of the woods.

"On their first arrival, contests take place for favorite localities, and the strongest and most courageous prevail. As the same individual birds and their offspring return to the same places each successive season, these combats often take place between the male parent and the strongest young male bird of the first brood; in fact, shocking as it may seem, between father and son; and the young prodigal often succeeds in beating his parent, who

has to put up with the second-best position, though perhaps still triumphing in song over his stalwart son, from his new dominion, some thirty or forty yards from the old one.

"The plumage of both sexes is very similar; a rich ferruginous light-brown on the back, getting rather brighter at the tail, while the general tone of the under parts is a light silvery gray. The nest is a slight but very picturesque structure, composed of small twigs in the outer part, and with substances of a somewhat softer texture in the interior, such as dry bents of grass, stray horse hairs, or other suitable materials. The eggs are about the size of those of the hedge-sparrow, but rather longer, being more oval in form. Their color is a rich greenish-olive, rather darker and greener in tone than ordinary brown paper, and they have no spots or markings of any kind. The plumage of the young bird is brown, mottled over with lightish ochreous spots, more or less regularly distributed. In general appearance young nightingales so closely resemble young robins, while still in their nest feathers, that they are often mistaken for each other.

"To conclude with a bathos, we are told by the Italian naturalist (quoting Petrarch), that a certain land-owner in the north of Italy got up one night, in the nightingale season, for the express purpose of destroying the nocturnal annoyances which disturbed his rest; and that, not succeeding in extirpating the enemies of sleep in this manner, he proceeded to the extreme measure of cutting down the woods to a considerable distance round his house, which proved a more effectual defence against the intolerable nuisance. Still worse than this is the following: The nightingale, after the close of the breeding season, having been well supplied with an abundance of insect food during the summer, is in a very fine condition during the month of September,—in fact, very plump and fat,—and his flesh having been tasted by connoisseurs at that season, and pronounced fully equal to that of the celebrated ortolan, thousands are captured in the south of France (the country of the troubadours) as table delicacies.

"THE NIGHTINGALE'S POWER OF SONG.—The great surgeon, John Hunter, who left nothing uninvestigated within the widest range then known to his professional pursuits, accounted for the extraordinary power of the nightingale's song by the size and strength of the muscles of the throat, which he found to be much more extensively developed than in any other singing bird; and this unusual development of the organs of the throat may account for the traditions of talking nightingales. Pliny asserts, for instance, that Drucus and Britannicus, the sons of Claudius, had nightingales that could speak both Greek and Latin; and that these birds might have been taught by ingenious Greek trainers to utter a few phrases with tolerable distinctness is exceedingly probable, as such traditions have always some founda-

tion. As regards talking nightingales, Pliny's assertion is not unsupported; for we find Gessner, the modern Theocritus, the modern master of idyllic poetry, and at the same time an experienced naturalist, describing two caged nightingales belonging to an innkeeper at Ratisbon, who, in the silence of the night talked with each other, repeating phrases which they had heard during the day. Even Buffon, while ridiculing the credulity of Pliny, and mistrusting, to some extent, the statement of Gessner, says that when reared from the nest they may be taught to talk. The prices paid in Rome for caged nightingales appear to have been really fabulous. Agrippina, the wife of the Emperor Claudius, having paid, as Pliny tells us, an enormous sum for a white nightingale, while an ordinary bird of extremely perfect song would sell for as much as a robust and well-trained slave."

Of the *Laniæ*, or Shrikes, our American Butcher-Bird, or great northern shrike, is a good example. This species only visits New England and the other states in the winter, and spends the breeding season in the more northern latitudes.

It makes its appearance about the last week in October, and is seen until the last week in May. During this period it preys upon small birds, mice, and such insects and larvæ as it finds in exposed situations, such as fences, piles of stones, &c.

In watching for its prey, it usually remains perched on a stake or small tree, in a field or meadow, carefully scanning the surrounding neighborhood. When a mouse or other small mammal presents itself in the grass, the bird folds its wings, drops on it with an unerring aim, and seizes it with its bill. If a flock of small birds, such as pine-finches, or red-polls, appear in sight, he immediately pursues them, and generally secures one or two before they are dispersed. We have seen an individual dart into a flock of tree sparrows, and kill three of them before they could escape; and it seems a characteristic of this bird to secure more than enough food for its present wants. Its habit of suspending small birds, mice, and insects on thorns and small twigs, is well known. This is done, we are inclined to think, not because, as many writers assert, that it will not eat its food when freshly killed, and it thus suspends it in order that it may become tainted, but rather to have this food stored for future need. We see many other birds with this same habit of providing for future wants; particularly the blue jay, and some of the woodpeckers.

We have never met with the nest of this species, and will borrow the description by Audubon. "About the 20th of April, the male and his mate are seen engaged in building their nest in the covered and secluded parts of the forests. I found several of their nests placed on bushes not above ten feet from the ground, without any appearance of choice as to the tree, but

generally towards the top, and placed in a fork. The nest is as large as that of the robin, and is composed externally of coarse grasses, leaves, and moss; internally of fibrous roots, over which is a bed of the feathers of the wild turkey and pheasant (*Tetrao umbellus*)."

Nuttall, in describing the nest, says that it is "large and compact, in the fork of a small tree, and sometimes in an apple tree, composed externally of dried grass, with whitish moss, and well lined with feathers."

The eggs are from four to six in number, of a dirty lead-colored white, and marked more or less thickly around the greater end with dashes and spots of brown of different shades. Dimensions of eggs, 1.12 by .78 inch.

There are several genera in this group, with a great many species scattered over the world. These birds are of similar habits with the one we have described.

We find the following account of the impaling habits of the English Butcher-Bird in the Architecture of Birds.

"A gentleman who was fond of reading Buffon, and similar works on natural history, expressed to us his doubts of the account originally given by Heckwelder of the butcher-bird (*Lanius collaris*) sticking insects on the point of a thorn, as a bait to allure small birds within its reach. To satisfy ourselves, as well as to settle the doubts of our friend, we undertook to watch the proceedings of the species just named, as also of the great butcher-bird (*Lanius excubitor*), both of which are so common that we found half a dozen of the nests of each within five miles of Lee, in Kent. We discovered that near those nests large insects, such as bumble-bees, and also that the unfledged nestlings of small birds, were stuck upon the thorns."

Mr. Selby says, "I had the gratification of witnessing this operation of the shrike upon a hedge-sparrow (*Accentor modularis*), which it had just killed, and the skin of which, still attached to the thorn, is now in my possession. In this instance, after killing the bird, it hovered, with the prey on its bill, a short time over the hedge, apparently occupied in selecting a thorn fit for its purpose. Upon disturbing it, I found the sparrow firmly fixed by the tendons of the wing to the selected twig."

When confined in a cage the shrike acts in a similar manner, and twists his victim in the wires, so as to secure it while he tears it to pieces. A New Holland shrike (*Vanga destructor*) has been noticed to perform the same act in captivity. It, after strangling a mouse, doubled it through the wires of its cage with every demonstration of savage triumph, and proceeded to tear it, limb from limb, and eat it.

Of the *Muscicapinae*, or Old World Flycatchers, there are a great many species. Our limits will prevent the consideration of more than one, to be considered as type of the whole.

The Spotted Flycatcher (*Muscicapa grisola*) is widely distributed throughout Europe; advancing northwards in summer, and retiring southwards in winter.

This Flycatcher is retired in its habits, frequenting embowered retreats, shady gardens, orchards, and groves, where the foliage affords it concealment; "not that it is timid, for if it is not rudely disturbed, it will allow itself to be closely watched during the performance of its aerial evolutions in the pursuit of its insect food. It generally chooses for its perch and observatory the bough of a fruit tree, or one of the lower branches of the elm, or other tree of tall growth; whence it takes short, abrupt circling flights, returning to the same or an adjacent twig."

"The note of this bird is a weak chirp, which is seldom uttered after the production of its young. The nest is built in different situations, as convenience may dictate; being found sometimes between the branches of a trained fruit tree and the wall, or in holes of the wall, hidden by foliage. It will also build in the holes of aged, gnarled trees, upon the ends of beams in out-houses, and in other places of concealment. The eggs are five in number, of a grayish-white, marked with pale orange-brown spots. When the young are able to fly, the parents lead them to a branch of a tree, and supply them with food. They soon learn to follow the old ones for the food, and then to catch their own prey, and become expert and quick in the pursuit. The color of this bird is ashy-brown above, white beneath."

The Fan-tailed Flycatcher (*Muscicapa flabellifera*), a native of New Holland, is a handsome bird. "It frequents," says Mr. Caley, "the small trees and bushes, from which it darts suddenly upon its prey of insects, spreading out its tail like a fan, and to appearance turning over like a tumbler pigeon, and then immediately returning to the same twig or bough from which it sprang. These actions it repeats many times." General color brownish-black; stripe above, and spot behind the eye, white; lateral tail-feathers white.

FAMILY PARID.E. TITMICE, CREEPERS, WRENS.

This family comprehends several large and interesting groups, which are characterized as follows:—

PARID.E	Outer toe	much longer than the inner. Tarsus and its claw long	COLUBRIN.E
			PARIN.E

TROGLODYTIN.E	Outer toe	little or no longer than inner. Bill	short, conic	slender, and more or less subulate; wings short and rounded, with the first primary more than half as long as the second.
				TROGLODYTIN.E

Of the *Troglodytinae*, or Wrens, there are many well-known species scattered over both hemispheres. They are small in size, and lively and familiar in habits, many of them living in the neighborhood of human habitations.

They feed principally upon insects and their larvæ, and eggs, and occasionally eat a few seeds. Our house, winter, long-billed, and short-billed wrens are familiar examples.

The Common Wren (*Troglodytes Europæus*) of Europe is spread over the whole continent, and is everywhere noted for its familiarity and its sprightly habits. In England it is very common, and braves the severity of the winter, flitting from spray to spray, and traversing the hedge-rows with restless activity. Its actions are very smart. It takes short flights, alights on a twig towards the bottom of the hedge, flirts up its short tail, utters a cry like *chit-chit*, and disappears in the maze of branches like a mouse, passes out on the other side, and repeats its flight. In the depth of winter it frequents farm-yards, cow-sheds, and similar places, both for the sake of shelter and food. The song of this species is varied and pleasing, and for the size of the bird remarkably loud and clear. This, we would remark in passing, is true of our own wrens, and we have heard in northern Maine the Winter Wren's song, so singularly sweet and clear that at the time we believed it unexcelled.

The European Wren begins to prepare its nest in March, and various are the places chosen as a site; sometimes under the thatched covering of an out-house, sometimes in a niche or cavity in the branches of a tree, often amidst the ivy covering aged walls or trees, or the side of a hayrick. It is a domed structure, with a small lateral aperture. Generally it consists externally of green moss; but it varies the material according to situation and the color of the objects around. The eggs are usually from six to eight in number, of a yellowish-white, sprinkled, especially at the larger end, with reddish-brown. It is a curious fact that the birds of this group often make several nests besides the one occupied for incubation. Many conjectures have been made concerning this habit. Some attributing the extra nests to caprice in regard to the merits of each; others to interruption, from some cause, in the work of building; while many believe that the incomplete structures are the work of the male bird, who employs his time, and amuses himself in their preparation, while the female is attending to the duties of incubation.

The European Wren and its habits are thus mentioned by an English writer: "A pair of wrens built their nest in a box, so situated that the family owning the grounds had an opportunity of observing the mother's care in instructing her young ones to sing. She seated herself on one side of the opening of the box, facing her young, and commenced by singing over all her notes very slow and distinctly. One of the little ones then attempted to imitate her. After chirping rather inharmoniously a few notes, its pipe failed, and it went off the tune. The mother immediately took up the tune

where the young one had failed, and distinctly finished the remaining part. The young one made a second attempt, commencing where it had left off, and continuing for a few notes tolerably distinct, when it again lost the notes. The mother began again where it ceased, and went through with the air. The young one again resumed the tune, and completed it. When this was done, the mother again sung over the whole of her song with great precision; and then another of the young attempted to follow it, who likewise was incapable of going through with the tune, but the parent treated it as she had done the first bird; and so on with the others. This was repeated at intervals every day while they remained in their nest."

The Parinæ, or Titmice, are well-known by numerous representatives in different portions of the world.

Of American Titmice, the Common Black-cap Titmouse, or Chickadee (*Parus atricapillus*) is probably the best known. This species remains with us through the year, being nearly if not quite as abundant in the winter as through the summer, and it is deservedly one of the greatest favorites. It commences building as early as the second week in May. The nest is placed in a hole excavated in a dead tree or stump. This hole is, like that of the woodpecker, gradually widened at the bottom, and is about nine or ten inches in depth. The nest is constructed of soft moss and the hairs of different animals. One beautiful specimen that we found in the northern part of Maine is composed of the hair of the common deer, moose, and hare, a few feathers of the ruffed grouse, and a few fragments of soft mosses. They are woven into a warm and comfortable tenement.

The eggs are from six to ten in number, usually about six. They are of a nearly pure white color, with a faint reddish tint, and are spotted, thickly at the greater end, with markings of reddish-brown. Their form is about ovoidal, and their dimensions average about .62 by .52 inch. Two broods are often reared in the season.

The Chickadee is eminently kindly and sociable in its disposition; and, although almost always in company with other birds,—such as the golden-crested and ruby-crowned wrens, nuthatches, &c.,—it is never seen quarrelling with them, but fraternizes with them in the most cordial manner. Often, when seated in the woods, have we been surrounded by them; and their curiosity to learn the cause of our presence and our employment was so great, that they would often perch on a twig within two feet of us, and scrutinize us with their shining black eyes, in a manner amusing to witness.

Ostensibly they were searching beneath the bark for their food; but really they were watching us. We once had one perch on our foot, and look in our face with a perfectly plain "what-do-you-want-here" expression on its countenance. Always at short intervals, while perched in trees, and



sometimes while flying, this bird utters its song, which consists of several notes, that may be described by the syllables *chewēēk-a-dee-dee-dee*, *chewēēk-a-dee-dee-dee*, emitted in a clear, sweet tone, easily recognized, and not to be mistaken for any other song. The flight of this species is wavering, and not protracted; the bird seldom extending it farther than from one tree to another. When in the air, at any considerable height, it resembles the flight of the woodpeckers, being undulating and partly gliding.

In some localities the titmouse is regarded as injurious, from the fact that it is often seen among the branches and leaves of the fruit trees and shrubs, pecking off and destroying the buds. It does not do this to the bud for food, but really for the grub contained in it. If these buds be examined after the chickadee has thrown them away, the burrow of a grub or caterpillar will appear in the very heart of them. The bird is able to discover the presence of these vermin much more readily than man could, and it is thus able to assail them at a period of their existence when they are doing the most harm. But it is not the insects and their larvae alone that he destroys. His microscopic eyes enable him to discover their eggs deposited on and in the crevices of the bark and in the buds, and in an instant he can destroy the whole future brood. The eggs of the moth of the destructive leaf-rolling caterpillar, those of the canker-worm, the apple-tree moth, and others of these well-known plagues, are greedily eaten by it; and this is in the inclement winter, when most of our other birds have abandoned us for a more genial climate.

In the summer time, the chickadee's labors are more easily noticed; and as he raises a large brood of young, the female laying six or eight eggs at a litter, he is very busy through the whole day in capturing vast quantities of caterpillars, flies, and grubs. It has been calculated that a single pair of these birds destroy, on the average, not less than five hundred of these pests daily: a labor which could hardly be surpassed by a man, even if he gave his whole time to the task.

"Moreover, the man could not be as successful at so small a cost; for, setting aside the value of his time and the amount of a laborer's daily wages, he could not reach the denser and loftier twigs on which the caterpillars revel, and which the titmouse can traverse with perfect ease. No man can investigate a tree, and clear it of the insect hosts that constantly beleaguer it, without doing some damage to the buds and young leaves by his rough handling; whereas the chickadee trips along the branches, peeps under every leaf, swings himself round upon his perch, spies out every insect, and secures it with a peck so rapid that it is hardly perceptible."

In some observations made on the habits of this and some other birds in Paris, it was found that the titmouse destroys, at the lowest computation,

over two hundred thousand eggs alone of noxious insects in the course of a year. That one small bird is thus able to accomplish so much good in destroying these myriads of vermin, is an appeal to the good sense of the farmer for the protection of the *whole class*, that should not be slighted.

There are several other species of American Titmice, among which are the great Carolina, the Hudson's Bay, the Crested, and the Tufted Titmice. Among the European species the most interesting is the bottle-tit, or Long-tailed Tanner. Its nest is bottle-shaped, and is thus described by Pennant. "The nest of this species is another example of ingenious construction, combining beauty of appearance with security and warmth. In shape it is nearly oval, with one small hole in the upper part of the side by which the bird enters. I have never seen more than one hole. The outside of the nest sparkles with silver-colored lichens adhering to a firm texture of moss and wool, the inside profusely lined with soft feathers. The nest is generally placed in the middle of a thick bush, and is so firmly fixed that it is mostly found necessary to cut out the portion of the bush containing it. In this species the female is known to be the nest-maker, and to have been occupied for a fortnight to three weeks in completing her habitation. She deposits from ten to twelve eggs, which are small and white, with a few pale red specks. The young family of the year keep company with their parent birds during their first autumn and winter.

The *Certhiæ*, or Creepers, are also well represented in different portions of the globe. In their numbers are placed, by Lilljeborg's system, the true creepers and the nuthatches. They are all adapted by the structure of their large feet and strong claws, for climbing the trunks and limbs of large trees, or the face of rocks, in quest of insect food. In general the beak is curved and elongated; most often it is moderate and strong.

Our American Creeper (*Certhia Americana*), and the Common Creeper (*Certhia familiaris*) of Europe, are of similar habits. They are active, fearless little birds, frequenting groves and orchards, where they are observed spirally ascending the stems of trees like mice, using the sharp shafts of their tail-feathers as props, or aids, to their ascent. If watched, they will be seen to probe with their slender bills the chinks and crevices of the bark, whence they extract the lurking vermin. Having finished their examination of one tree, which is quickly accomplished, they do not descend, but by a quick flight they pass to another tree, and quickly examine it, ascending as before in a spiral manner. Their note is weak and unmusical, and is frequently repeated, especially during flight from tree to tree, or while stationary. The nest is built in a hollow limb of a tree, in a deserted nest of a woodpecker or squirrel, or a hole in a fence post. Usually the locality is chosen in the deep woods, and seldom near dwellings, or in the orchards.

The materials used in the construction are soft grasses, feathers, and the bark of the cedar and grape-vine. The eggs are usually about six in number. Their color is a dull-gray; and they are marked, thickest near the great end, with small spots of reddish-brown, and a few dabs of a darker color. Mr. Allen speaks of a nest being found "in a large elm in Court Square, Springfield, about ten feet from the ground, and built behind a strip of thick bark that projected in such a way as to leave a protected cavity behind it." Dimensions of eggs average about .70 by .50 inch.

Of the Nuthatches, there are several species in America, and a number in the Old World. Their habits are similar to those of the creepers above presented, with the exception of their choice of a nesting-place; for the nuthatches often excavate a hole in the solid wood of a tree, which labor is not difficult, since the bird is possessed of a strong, wedge-shaped, pointed bill.

FAMILY HIRUNDINIDÆ. SWALLOWS.

This group, the true Swallows, the characteristics of which are given in a preceding page, includes all those familiar, well-known birds, the Barn, Cliff, White-bellied, and Bank Swallows, and Purple Martin of America, the Window and Common Swallows of Europe, and many others. The Chimney Swallows, or Swifts, are placed in another group.

The habits of these birds are so well-known that we will not notice them at any great length in this work.

The Barn Swallow, a universal favorite, arrives in New England and its latitude between the tenth and the twenty-fifth of April. It quickly disperses, and soon commences preparations for nesting. About the tenth of May, after the birds have paired, they commence building; or sometimes the same couple begin repairing the nest of the preceding year or years, as the same nest is occupied several seasons. It is built in the eaves of houses or barns, or on rafters of barns and other buildings. It is constructed outwardly of a strong shell of pellets of mud, which are plastered together, and, as Nuttall says, "tempered with fine hay, and rendered more adhesive by the glutinous saliva of the bird." This nest is built out and up until the top is about horizontal, and then lined with a layer of fine grass or hay, which is covered with loose feathers. This bird is fond of society, often as many as twenty nests being in the same eaves. The eggs are usually four in number, sometimes five. They are of a nearly pure-white color, with a slight roseate tint; and are spotted more or less thickly with fine dots of two shades of brown, reddish, and purplish. The dimensions of the eggs average about .76 by .52 inch. Two broods, and sometimes three, are reared in the season. The period of incubation is thirteen days.

About the first week in September, the old and young birds of different

families gather in immense flocks, and, after remaining about the marshes near the sea coast for a few days, they leave for their winter homes.

The Cliff Swallow is very generally distributed as a summer inhabitant of the United States. It arrives in the north from about the twenty-fifth of April to the first of May. It has all the habits and characteristics of the preceding species, and is probably as well-known in most sections as that bird. About the tenth of May (sometimes earlier, sometimes later, according to latitude) it pairs, and commences building. The nest is usually fixed beneath eaves or cornices, or other jutting portions of buildings, or on cliffs, beneath overhanging portions of rock. It is constructed externally of pellets of mud and earth, which are gradually plastered together into a large gourd-shaped structure; the larger part attached to the building or cliff, and the neck curving outward and downward. At the part of the nest resembling the neck of the gourd is the entrance. The whole fabric is much more brittle than the nest of the barn swallow, for the reason that no grass or hay is worked into the mud to give it strength. A lining of fine grass and feathers is fixed in this, and the whole makes a very neat and comfortable structure. The eggs are usually five in number. They can hardly be distinguished from those of the preceding species; and, in fact, identification is next to impossible. In a majority of the present species, the spots are somewhat coarser, and the eggs are generally longer. The eggs are of the average dimensions of .84 by .54 inch.

Like the barn swallow, this species gathers into large flocks at the end of the summer, and frequents the same localities, but not at the same time, as it leaves usually a week or ten days before the other bird.

The White-bellied Swallow, or Blue-backed Swallow, is a very common and well-known species as a summer inhabitant of the Northern States, being most abundant in localities near sheets of water, and less common in high, dry districts. Its habits are well known; and arriving, as it does, early in the season, and fraternizing with man, it is a great favorite. It makes its appearance often as early as the seventeenth of April, but does not commence building before the middle of May. Near cities and towns, the nest is built in martin-boxes provided for its reception; but in less thickly settled districts, it is built in holes in stumps and trees; and cases are on record of its being built in a deserted nest of the common barn swallow. When passing through the chain of the Umbagog Lakes, in Maine, we observed great numbers of these birds, whose nests were built in holes in dead trees standing in the lake near the shores. These nests were so plenty, that, in the area of about ten rods square, we counted over fifty. Of course, the birds were in myriads, and the species constitutes the common swallow of the districts in that latitude. The materials used in the construction of the

nest are fine grasses, hay, and feathers: these are adjusted loosely in the cavity of the tree, and without any form. The eggs are, most commonly, five in number. Their color is a beautiful clear white, with a roseate tint before their contents are removed. They are extremely thin and fragile, much more so than most of the other species; and their form is a slender oval. The eggs are about .79 by .56 inch. Two broods are generally reared in the season, and the period of incubation is fourteen days.

The Bank Swallow, unlike all our other swallows, avoids the immediate neighborhood of man in selecting its breeding-place; and it is *abundant* only in the neighborhood of streams, or other sheets of water. It is distributed with us as a summer resident, and in many localities is very abundant. It arrives the first week in May, often earlier, and soon pairs, and commences building, or rather excavating, for the nest. The excavations are made in sand-banks, in the same manner as those of the kingfisher, and are often three or four feet in depth, usually about eighteen inches. At the end of this burrow, which is widened and enlarged, is placed the nest, composed of dried grasses, hay, feathers, and other like soft materials. The birds are sociable in their habits, as are all the other species; and often as many as twenty and thirty holes may be seen in the same bank. The number of eggs is either five or four. These are of a pure white color, and vary but little in size or shape; the latter being almost always oval, and the size ranging from .72 by .52 inch to .68 by .49 inch. Usually two broods are reared in the season, but often only one.

In habits, this bird resembles the other swallows, but is not so quarrelsome as they, and we never noticed two of this species fighting. Its note is not, like theirs, shrill and oft-repeated, but is only a seldom-uttered lisping chatter. It leaves New England by the last week in August.

The Purple Martin is another of our familiar swallows. Wilson's description of it is as follows:—

"The summer residence of this agreeable bird is universally among the habitations of man, who, having no interest in his destruction, and deriving considerable advantage as well as amusement from his company, is generally his friend and protector. Wherever he comes, he finds some hospitable retreat fitted up for his accommodation and that of his young, either in the projecting wooden cornice, on the top of the roof or sign-post, in the box appropriated to the bluebird, or, if all these be wanting, in the dove-house among the pigeons. In this last case, he sometimes takes possession of one quarter or tier of the premises, in which not a pigeon dare for a moment set its foot. Some people have large conveniences formed for the martins, with many apartments, which are usually full tenanted, and occupied regularly every spring; and, in such places, particular individuals have been

noted to return to the same box for several successive years. Even the solitary Indian seems to have a particular respect for this bird. The Choctaws and Chickasaws cut off all the top branches from a sapling near their cabins, leaving the prongs a foot or two in length, on each of which they hang a gourd or calabash, properly hollowed out, for their convenience. On the banks of the Mississippi the negroes stick up long canes, with the same species of apartment fixed to their tops, in which the martins regularly breed. Wherever I have travelled in this country, I have seen with pleasure the hospitality of the inhabitants to this favorite bird.

"About the middle or 20th of April, the martins first begin to prepare their nest. The last of these which I examined was formed of dry leaves of the weeping willow, slender straws, hay, and feathers in considerable quantity. The eggs were four, very small for the size of the bird, and pure white, without any spots. The first brood appears in May, the second late in July. During the period in which the female is laying, and before she commences incubation, they are both from home the greater part of the day. When the female is sitting, she is frequently visited by the male, who also occupies her place while she takes a short recreation abroad. He also often passes a quarter of an hour in the apartment beside her, and has become quite domesticated since her confinement. He sits on the outside, dressing and arranging his plumage, occasionally passing to the door of the apartment, as if to inquire how she does. His notes, at this time, seem to have assumed a peculiar softness; and his gratulations are expressive of much tenderness. Conjugal fidelity, even where there is a number together, seems to be faithfully preserved by these birds. On the 25th of May, a male and female martin took possession of a box in Mr. Burtram's garden. A day or two after a second female made her appearance, and staid for several days; but from the cold reception she met with, being frequently beat off by the male, she finally abandoned the place, and set off, no doubt, to seek for a more sociable companion.

"The purple martin, like his half-cousin the kingbird, is the terror of crows, hawks, and eagles. These he attacks whenever they make their appearance, and with such vigor and rapidity that they instantly have recourse to flight. So well known is this to the lesser birds, and to the domestic poultry, that, as soon as they hear the martin's voice engaged in fight, all is alarm and consternation. To observe with what spirit and audacity this bird dives and sweeps upon and around the hawk or the eagle is astonishing. He also bestows an occasional bastinading on the kingbird when he finds him too near his premises; though he will, at any time, instantly coöperate with him in attacking the common enemy.

"The martin differs from all the rest of our swallows in the particular

prey which he selects. Wasps, bees, large beetles, particularly those called by the boys *goldsmiths*, seem his favorite game. I have taken four of these large beetles from the stomach of a purple martin, each of which seemed entire, and even unbruised.

"The flight of the purple martin unites in it all the swiftness, ease, rapidity of turning, and gracefulness of motion of its tribe. Like the swift of Europe, he sails much with little action of the wings. He passes through the most crowded parts of our streets, eluding the passengers with the quickness of thought; or plays among the clouds, gliding about at a vast height, like an aerial being. His usual note—*peuo, peuo, peuo*—is loud and musical, but is frequently succeeded by others more low and guttural. Soon after the 20th of August he leaves Pennsylvania for the south."

In New England, this species begins to prepare its nest about the 10th of May: this is composed of dried grasses, leaves, and feathers, and is deposited usually in a box prepared for this purpose. The eggs are from four to six in number, of a pure white color, and vary but little in form from exactly oval. They average about 1 by .70 inch. Two broods are often reared in the season, and the period of incubation is fourteen days.

In Europe the swallows are great favorites. An English writer says, "The swallow brings out her first brood about the last week of June or the first in July, and her second brood towards the middle or end of August. During the month of September the young of the last incubation have acquired full strength of wing. At the end of that month, or beginning of October, the great migratory movement southwards commences. Multitudes from various quarters now congregate together, and perch at night in clusters on trees, barns, house-tops, but especially among the reed beds of marshes and fens, round which, as evening draws on, they may be observed wheeling and skimming, now sinking, now rising and wheeling again, all the while uttering their garrulous concert, till they finally settle down, and all is quiet and silent."

It is a remarkable circumstance in the history of our *Hirundinidae*, that they return annually to the same place, and often resume and repair their old nests, or if they have been destroyed, build others in their stead; but the question arises, Is not this, to a greater or less extent, the same with all our summer visitors? Do they not, very often, return to their old haunts? We know of individuals of several species that yearly are seen in the same locality. We have in mind a robin (*T. migratorius*), which, possessing a song different from that of his species, is easily known, and he always spends the summer in a certain garden, enlivening the whole neighborhood

with his merry song. A bluebird, of well-known manners, occupies with his mate the same box every year, and his appearance is at about the same date every spring.

A number of swallows have, for several years lately, occupied nests in a barn in Milton, Mass., and when they arrive in the spring, they repair at once to these old nests, and furnish them anew. Birds of prey,—eagles, hawks, and owls,—it is well known, use the same nest for several years; in fact, there are many proofs that our birds become attached to a certain locality, and frequent it afterwards, until they are prevented by accident, or are driven away by design.

The food of our swallows, consisting of the smaller insects, is almost always taken while on the wing. They often completely fill the throat with their insect prey, so as to distend it like a pouch, doubtless in order that their nestlings may have a full supply at each visit.

The female is very assiduous in the nurture of her young. She leads them, as soon as they are able to leave the nest, to a fence, rail, or ridge of a house, or barn roof, where, settled in a row, and as yet unable to exert their pinions in flight, she supplies them bountifully with food. In a few days they follow her on the wing, where they are fed by her and her mate, and soon they are able to provide for themselves.

FAMILY MOTACILLID.E. THE WAGTAILS.

In this group are included the *Motacilline*, of which the White Wagtail is the type, and the *Anthine*, or Titlarks, of which our common Titlark (*A. ludoricianus*) is a good representative.

The Wagtails are restricted to the Old World, but one species (*Motacilla alba*) being found on this continent as a very rare wanderer from Europe. They are numerous, there being many species scattered through Europe, Asia, and Africa. They are generally sober in plumage, but many of them are possessed of considerable powers of song. The wings are long and pointed, the tail nearly twice the length of the body, and its constant jerking motion has given the birds their common name. They frequent open pastures, meadows, and fields, run swiftly, and have an exceedingly graceful, buoyant, and undulating flight. "On alighting on the ground, they spread the tail, and while running along, constantly vibrate the body and tail in a very singular manner. Their food consists of insects and worms; their nests are made upon the ground, amid herbage and stones, and they lay from four to six spotted eggs. Their note is usually short and shrill, and is often repeated as they run about in search of their prey."

The American Titlark is not very abundant in any portion of this country, being found here seldom in any other season than the fall and winter

months. It is most frequently found in the neighborhood of the sea-coast or its large marshes, and in large tracts of level, dry, weedy pastures and fields.

While with us, it flies in loose, detached flocks, in a jerking, irregular sort of flight, uttering occasionally its feeble, lisping *queêt queêt*. It seems always busily employed, either on the beach, in gathering the small shell-fish and animalcules thrown up by the tide, or in pastures and stubble-fields, in gleaning the seeds of weeds and grasses. It also feeds upon spiders, and such insects as it is able to find in the dead grass and weeds.

This species breeds in the most northern parts of the continent. Nuttall says the "nest is built in the fissures of cliffs, is composed of dry grass and a little moss, and lined with finer blades of the former, and a few long hairs. The eggs are four or five in number, of a sullied-white color, and covered with small brown spots, collected chiefly towards the larger end."

FAMILY TANAGRID.E. TANAGERS, AND WARBLERS.

In this group are included the *Sylricolines*, the American Warblers, distinguished by the slender subulate bill, and the *Tanagrine* (the Tanagers proper), characterized by their thick, more or less conic, bill, which is sometimes dilated at base: both of these sub-families are restricted to the New World.

The American Warblers, comprehended in Gray's genera in the genus *Mniotilla*, but now distributed among several genera, *Dendroica*, *Purula*, *Geothlypis*, *Helminthophaga*, &c., are thus characterized: "The species of this division are found, in consequence of their migratory habits, in various parts of the vast continent of America and its adjacent islands. They are usually observed on trees or in low thickets, especially those near rivers or lakes, actively engaged in examining the bark of the trunk and branches, and the leaves of trees, for spiders and various insects, which constitute their food, both in the perfect and imperfect states. As soon as they have finished their examination of one bush or tree, they pass, by a short active flight, to another, which undergoes the same scrutiny; and some species are seen flying about the upper branches of the trees, feeding on the small dipterous insects that frequent such localities, taking them while on the wing. At other times these birds feed sparingly on small berries. The nest is generally formed near or on the ground, in a bush, or in the fork of a tree, of grass, sometimes very compactly woven together, and lined with hair and down, in which the female lays from four to six eggs."

Of these birds there are upwards of one hundred and thirty species. They are of graceful motions, neat and symmetrical form, and many of them are possessed of most elegant plumage, surpassing most birds in this respect.

The Black and White Creeper (*Mniotilla varia*) is common in the United States, east of the Missouri. In its habits, it resembles both the creepers and warblers; moving about the bodies and limbs of trees with the ease of the former, and gleaning amongst the foliage the insect hosts like the latter. We have sometimes seen it seize a flying insect while on the wing, although this must have been a departure from its general habits.

The song of the male during the mating season is a sort of lisping rendition of the syllables *whê-chee*, *whê-chee*, *whê-chee*, *whê-chee*, uttered at first loud, and gradually weakening to a subdued note, like *cheêt*. At other times it has only a faint chirp or *chink*, which is uttered by both sexes. About the 10th of May, after the birds have paired, they commence building the nest. This, Audubon says, in Louisiana, "is usually placed in some small hole in a tree, and is composed of mosses in a dry state, and lined with cottony substances." In New England it is almost always built, or rather placed, on the ground; the situation is chosen usually beneath an overhanging point of rock, or beneath a fallen trunk of a tree. It is made of mosses, straw, leaves, and other soft materials, and is lined with cotton from ferns, soft grass, or hair. The eggs are laid by the middle of May. They are usually four or five in number. Their color is white, with a slight cream tinge; and they are spotted irregularly with fine dots and confluent blotches of reddish-brown, thickest near the largest end of the egg. Dimensions of the eggs average about .65 by .54 inch.

The Blue Yellow-backed Warbler (*Parula Americana*) is rather common, as a summer resident of eastern North America to the Missouri River.

In the Northern States it arrives from the south about the middle of May, sometimes a little earlier. The birds, on their arrival, seem to be mated; for they are almost always seen in pairs, often two males with one female. Their habits are very similar to those of the titmice, and they are equally at home in the high foliage of trees and in the low thickets and shrubbery. When travelling through the trees, they run nimbly both across and along the branches, sometimes hanging head downwards, sometimes fluttering at the extremity of a small twig. They are very nervous and active, and are almost continually employed in catching caterpillars and insects, of which their food consists. While thus engaged, they emit, occasionally, a feeble note, like the syllables *che-weêch*, *che-weêch*, *che-weêch*, uttered at first low, and rapidly increasing in volume. When passing through the forests of Maine and New Hampshire, we have seen numbers of these birds, particularly in the neighborhood of swamps, flying from the tops of the huge hemlocks, and seizing the small lacewinged flies (*ephemerides*) that are abundant in those regions in May and June. We also noticed that they fed largely upon the small caterpillars (*geometridæ*); and



ANAS CLYPEATA
(The Shoveller Duck.)



HARELDA GLACIALIS
(The Longtailed or Northern Hareld.)



SULA BASSANA.
(The Solan Goose.)



ANSER ERYTHROPUS
(The White-fronted Goose.)



MORMON ARCTICA.
(The Puffin.)



LARUS MELANOCEPHALUS
(The Laughing Gull.)

we saw them occasionally descend to the surface of a lake or river, and seize small spiders that were struggling in the water. The habits of this bird have caused it to be classed in many different ways. Linnaeus and others placed it in the genus *Parus*, Latham and many others called it *Sylvia*, some have named it *Motacilla*, and Stephens named it *Thryothorus*. It, however, belongs properly among the warblers; and this position seems its most natural one. About the first of June the birds commence building their nest. This is placed in a fork near the end of a branch of a tree, about twenty feet from the ground. It is usually constructed of the long, gray Spanish moss that is so plentiful in the states of Maine, New Hampshire, and Vermont. A beautiful specimen in our possession is of this description, and one of the most curious specimens of bird architecture. The long hairs of the moss are woven and twined together in a large mass, on one side of which is the entrance to the nest, a mere hole left in the moss; the lining is nothing but the same material, only of a finer quality. The eggs are usually four in number, and they are laid about the first week in June. Their color is white, with a very slight creamy tint, and covered more or less thickly with spots and confluent blotches of brownish-red and obscure lilac, thickest at the large end. Dimensions of the eggs about .63 by .46 inch.

The Maryland Yellow-Throat (*Geothlypis trichas*) is also a common inhabitant of all the eastern United States. It arrives from the south about the second week in May, sometimes earlier, and soon commences building. The nest is usually placed on the ground, although often in thickets of briars and bushes. It is constructed of leaves and grasses, and is lined with fine grasses and hairs. It is often built over at the top, with the entrance through a hole in the side. The whole makes a bulky affair, almost impervious to water. The eggs are laid about the last week in May or first week in June. They are variable in size and markings, but are usually five in number, and creamy-white in color, with numerous spots of dark-brown and obscure spots of lilac. These markings are thinly scattered over the eggs, but are quite thick at the larger end. This species rears two broods in the season in southern New England. We have found nests often as late as the middle of July. The habits of the Maryland yellow-throat are well known. He is first noticed in the swampy thickets, darting in and out through the tangled shrubbery. Soon he makes his appearance in the flower garden and orchard, where he may be seen at almost all times through the breeding season, busily engaged searching for his insect food; occasionally pausing to carol his pretty song, *whe-tit-te-tee*, *whe-tit-te-tee*, then darting away for a discovered insect, then caressing his mate, or flying to his nest with food for their young.

The Yellow-breasted Chat (*Icteria viridis*) is also placed in this group; abounding in the south and west, Massachusetts seems to be the northern limit of this bird's habitat in New England; and even in this state it is a very rare species. Nuttall's description of its habits is as follows:—

"The males, as in many other migrating birds, who are not continually paired, arrive several days before the females. As soon as our bird has chosen his retreat, which is commonly in some thorny or viny thicket, where he can obtain concealment, he becomes jealous of his assumed rights, and resents the least intrusion, scolding all who approach in a variety of odd and uncouth tones, very difficult to describe or imitate, except by a whistling; in which case the bird may be made to approach, but seldom within sight. His responses on such occasions are constant and rapid, expressive of anger and anxiety; and, still unseen, his voice shifts from place to place amidst the thicket, like the haunting of a fairy. Some of these notes resemble the whistling of the wings of a flying duck, at first loud and rapid, then sinking till they seem to end in single notes. A succession of other tones are now heard, some like the barking of young puppies, with a variety of hollow, guttural, uncommon sounds, frequently repeated, and terminated occasionally by something like the mewing of a cat, but hoarser,—a tone, to which all our vireos, particularly the young, have frequent recurrence. All these notes are uttered with vehemence, and with such strange and various modulations as to appear near or distant, like the manœuvres of ventriloquism. In mild weather also, when the moon shines, this gabbling, with exuberance of life and emotion, is heard nearly throughout the night, as if the performer were disputing with the echoes of his own voice.

"About the middle of May, soon after their arrival, the *icterias* begin to build, fixing the nest commonly in a bramble-bush, in an interlaced thicket, a vine, or small cedar, four or five feet from the ground. The outside is usually composed of dry leaves, or thin strips of grape-vine bark, and with root fibres, and dry, slender blades of grass. The eggs are about four, pale flesh-colored, spotted all over with brown or dull red. The young are hatched in the short period of twelve days, and leave the nest about the second week in June."

The eggs are of the average dimensions of .70 by .60 inch.

The food of this bird consists of those small insects and spiders that are found in the thick shrubbery of brier patches, and on the ground among the fallen leaves. It also occasionally captures flying insects in the manner of the vireos; and this fact has caused it, more than its peculiarities of form, to be classed by some authors with those birds.

The Oven-bird, or Golden-crowned Thrush (*Seiurus aurocapillus*) is also placed in this family. This beautiful and well-known bird is a common

summer inhabitant of the eastern United States, breeding abundantly in all. It arrives in New England and its latitude from the south about the last week in April or first in May, and soon commences building. The birds are not often paired on their arrival, and many are the little quarrels and battles that occur between two or three males for the possession of one of the opposite sex. The birds both work diligently in the construction of the nest, which is a model of neatness and ingenuity. It is built on the ground in the woods, usually in a dry situation. The materials used are dry leaves and grasses; these are arranged compactly together, and built over at the top, the entrance being on the side, like an old-fashioned oven; hence the familiar name of the "Oven-bird." The nest is usually placed in a slight hollow in the earth, scratched by the birds, and is lined with soft grasses and hairs. The eggs are from three to five in number, usually four. They are of a delicate creamy-white color, and spotted irregularly with different shades of reddish-brown; and some specimens have a number of spots of obscure lilac color. The markings are usually thickest at the larger end of the egg, where they are often confluent, and cover the primary color. Dimensions of eggs average about .79 by .64 inch.

The Golden-crowned Thrush is seldom found in any but the most retired and thickly wooded localities, and it generally prefers the neighborhood of a swamp for its home. Its song is a peculiar one, and easily recognized. It consists of the repeated utterance of the syllables, *qui-cha, qui-cha, qui-cha, qui-cha, qui-cha*, begun at first very low, and rapidly increasing in volume. We have heard this song, in the mating and incubating seasons, at all hours of the night. The bird seems, at that time, to ascend into the air to a considerable height, and utters its notes while hovering and slowly descending. We have noticed the same habit in the Maryland Yellow-throat and some other birds; and suppose that it is owing to, and to show, his great affection for his mate, and to anxiety for the success of her labors.

When on the ground, the Oven-bird runs with great rapidity, frequently jetting its tail, and uttering its sharp alarm-note. If the nest is approached, the male throws himself in the way of the intruder, and endeavors to draw him from its vicinity, scolding all the time with the greatest vehemence. If the female is driven from her domicile, she suddenly flutters along the ground, her wings extended, counterfeiting lameness in a very natural and generally effective manner.

This species, in consequence of its eminently terrestrial habits, often falls a victim to snakes and skunks. We have repeatedly found nests, and left them, in order that we might acquaint ourselves with the breeding peculiarities of the bird; and in a day or two, on paying it a second visit, found that a skunk or other depredator had destroyed the whole family.

The Oven-bird feeds principally upon small insects and smooth caterpillars, which it obtains usually on the ground, among the fallen leaves. When berries are in season, it feeds occasionally upon them; and it seems particularly fond of small spiders, with which we have sometimes found its stomach filled. About the 12th or 15th of September, after the young birds have become capable of providing for themselves, the whole family leave for the south.

The Pine-creeping Warbler (*Dendroica pinus*) is also abundant in the Eastern States, arriving from the south very early, often before the last snow-storm of the season, and remains in the deep swamps of hemlocks or pines until the weather opens. The nests are built in forks of pine trees, about twenty feet from the ground. They are constructed of the bark of the cedar and leaves of the pine. These materials are entwined into a neat structure, which is warmly lined with mosses, and hairs of different animals. The eggs are of a bluish-white, with a slight roseate tint. This primary color is dotted with spots of two shades of brown and reddish, and some spots of purple. Dimensions of eggs vary from .69 by .50 inch to .67 by .51 inch.

In the migrations, these birds associate in detached flocks. In the spring they are in company with the Red-poll Warblers, and in the fall, with the Yellow-rumps.

They are, in the summer, almost always observed in the pine groves, actively traversing the limbs and branches, sometimes with the movements of the Creepers and Titmice, sometimes with those of the Warblers, and often flying from the foliage and seizing an insect on the wing, like the Flycatchers.

Their song is now somewhat similar to that of the Field Sparrow, or perhaps more like a mixture of that and the song of the Indigo-bird, if such can be imagined. It consists of the syllables *tweet, 'weet, 'weet, 'weet, 'weet, 'weet*, uttered at first slow and faint, but rapidly increasing in utterance and volume. Besides this it has a sort of trilling note, like *fre, 're, 're 're, 're, 're*, uttered softly and listlessly.

In the autumn, they add to their usual insect food small berries and seeds. They are now nearly silent, having only a quick, sharp chirp. They are scattered through the fields and woods, and seem to be as much on the ground as in the trees. They depart for the south by the 10th or 15th of October.

The Chestnut-sided Warbler (*D. Pennsylvanica*) is a summer inhabitant of the United States, and is plentiful in Massachusetts and the states south, gradually growing rare as we advance north. It makes its appearance from the south about the first to the middle of May, according to latitude,

and commences to build about the last week in this month or the first in June. The nest is usually built in a small fork of a low tree, often in bushes, but a few feet from the ground. It is constructed of thin strips of pliable bark and fine grasses. These materials are bent and intwined together, and over the outside are pieces of caterpillar silk and cobwebs, which are plastered on, seemingly to give the fabric compactness and consistency. The nest is deeply hollowed, and lined with horse-hairs and slender strips of the bark of the grape-vine. Nuttall describes a nest found in Acton, Mass., as follows:—

"It is fixed in the forked twigs of a hazel, about breast high. The fabric is rather light and airy, being made externally of a few coarse blades and stalks of dead grass, then filled in with fine blades of the same; the whole matted and tied with caterpillars' silk, and lined with very slender strips of brown bark and similar white-pine leaves."

The nests which we have collected are of a different character from his description, being compactly and neatly made of bark from the cedar, and grasses, and lined with horse-hair; but we have no doubt that this species, like many others, varies in breeding habits in different localities. The eggs are three or four in number, and are laid about the first week in June. They are of a delicate creamy-white color, and marked at the great end with spots of brown, which are often confluent. The spots are of two colors, a reddish-brown and purplish-brown. The dimensions vary from .70 by .51 inch, to .63 by .50. But one brood is raised in the season.

This is another of those birds which seem to have become quite abundant within a few years. Wilson, Nuttall, and others, speak of it as being a very rare species; and it is now one of the most common of birds, in localities where it was, a few years since, quite rare. It prefers a growth of low shrubs, and scrub-oaks, and birches, to a forest of tall trees, and is seldom seen in the latter.

Its note consists of the syllables 'che 'che 'ch 'ch'ea, repeated at short intervals. It has also, at times, a rattling cry, something like the alarm-note of the Maryland Yellow-throat.

The female has nothing but a sharp chirp, which she often emits in answer to the song of the male. When approached while on the nest, she sits quietly until the intruder is quite near.

The Tanagers proper, included in several genera, occur in most portions of North and South America. They are among the most gaudily attired of all the birds, and some species are possessed of considerable powers of song. They frequent forests, swamps, and orchards, and feed on insects and their larvæ, and the buds of trees and berries. Those species which do not spend the year in tropical regions, migrate to more temperate

latitudes to breed, but return to the other localities to pass the winter months.

Among these birds, one of the most familiar is the Scarlet Tanager (*Pyranga rubra*). The male of this species in full plumage is a brilliant scarlet-red, with wings and tail black. The female and male in autumn are of a dull-green, inclining to yellow, with the wings and tail dusky.

"This splendid and transient resident," says Nuttall, "accompanying fine weather in all its wanderings, arrives from his winter station in tropical America from the beginning to the middle of May, and extends his migrations, probably, to Nova Scotia as well as Canada. With the shy, unsocial, and suspicious habits of his gaudy fraternity, he takes up his abode in the deepest recesses of the forest, where, timidly flitting from observation, he darts from tree to tree like a flashing meteor. A gaudy sylph, conscious of his brilliance, and the exposure to which it subjects him, he seems to avoid remark, and is only solicitous to be known to his humble mate, and hid from all beside."

"The female Tanager shows great solicitude for the safety of her only brood; and on an approach to the nest, appears to be in great distress and apprehension. When they are released from her more immediate protection, the male, at first cautious and distant, now attends and feeds them with activity, being altogether indifferent to that concealment which his gaudy dress seems to require from his natural enemies. So attached to his now interesting brood is the Scarlet Tanager, that he has been known, at all hazards, to follow for half a mile one of his young, submitting to feed it attentively through the bars of a cage, and, with a devotion which despair could not damp, roost by it in the branches of the same tree with its prison."

The favorite localities of this bird seem to be oak groves, situated near swamps. Here we have often heard several males singing at the same time, and have watched them in their active movements in their pursuit of insects, of which this species destroys great numbers. The nest is placed on a horizontal limb of a tree, usually from fifteen to twenty feet from the ground, in the deep woods. It is constructed of slender twigs of the oak, huckleberry, or whortleberry bush, and weeds. These are loosely put together; so much so, that, were it not for the interlacing of the small joints of the twigs, it would soon fall apart. It is not deeply hollowed, and is lined with thread-like fibrous roots and the leaves of the various pines. The whole structure is so thinly made as almost to fall to pieces on removal from the tree. The eggs are usually four in number, sometimes three, seldom five. They are of a dull, light, greenish-blue color, of different shades, and spattered with purplish-brown, in some specimens quite thickly, in others less so.

The Scarlet Tanager thrives well in confinement, and makes a beautiful and interesting pet. We once kept one caged for over six months. He ate seeds and small fruits, and within a week after his capture, chanted his warbling song with perfect freedom. He had, and we have also noted that all of this species have, a sort of ventriloquism in his song. It at times sounded as if at quite a distance; and we have been deceived in this manner, by birds that were almost over our head, into supposing that they were far away. The song is almost exactly like that of the robin, but is often broken with a pensive call-note, sounding like the syllables *chip churr*.

Early in September, the Tanagers leave for their southern homes, from which they seem, while here, hardly more than wanderers. They winter, probably, in Central America and the Bahamas.

Of the Tanagers, there are nearly two hundred and thirty species, most of which are peculiar to South America; a great many, to Mexico and Central America, and three or four are visitors to the United States.

Resembling the *Sylvicolinae* in habits, and by Lilljeborg classed with them, are the Vireos.

In the present volume we will place them in a family by themselves, called the

VIREONID.E. VIREOS.

Bill short, strong, straight; the culmen slightly curved, the sides much compressed to the tip, which is rapidly curved and deflected; the gonys long and ascending; the gape with short, weak bristles; the nostrils basal, rounded, and exposed, the feathers of the head advancing forward on the bill to the nostril; wings variable, rather long, and pointed; the first quill sometimes spurious, the larger outer one always graduated a little; tail nearly even, and rather short; tarsi longer than the middle toe; outer toe a little longer than the inner; hind toe rather shorter than the middle one.

Of these birds, the beautiful Red-eyed Vireo, with its green coat and white vest, is a good representative.

We feel that no description of ours can begin to do justice to the genial, happy, industrious disposition of this, one of our most common, and perhaps best-beloved birds. From the time of its arrival, about the first week in May, until its departure, about the first week in October, it is seen in the foliage of elms and other shade trees in the midst of our cities and villages, in the apple trees near the farm-houses, and in the tall oaks and chestnuts in the deep forests. Always, almost unceasingly, at all hours of the day, from early dawn until evening twilight, his sweet, half-plaintive, half-meditative carol is heard. We know that we are not singular in our preference, when we say, that, of all our feathered acquaintances, this is the greatest favorite

we have. We always loved it; and we can never look upon one after it is killed, no matter how naturally it is preserved, without a sad feeling, as if it were one of our own most dear friends dead before us.

Says Nuttall, —

"The song is delivered almost without any sensible interval, with earnest animation, in a pathetic, tender, and pleasing strain, well calculated to produce calm and thoughtful reflection in the sensitive mind. Yet, while this heavenly reverie strikes on the human ear with such peculiar effect, the humble musician himself seems but little concerned; for all the while, perhaps, that this flowing chorus enchanteth the hearer, he is casually hopping from spray to spray in quest of his active or crawling prey; and if a cessation occurs in his almost untiring lay, it is occasioned by the caterpillar or fly he has fortunately just captured. So unaffected are these delightful efforts of instinct, and so unconscious is the performer, apparently, of this pleasing faculty bestowed upon him by nature, that he may truly be considered as a messenger of harmony to man *alone*, appointed by the fiat of the creative power. Wantonly to destroy these delightful aids to sentimental happiness ought therefore to be viewed, not only as an act of barbarity, but almost as a sacrilege."

The Red-eyed Vireo commences building about the first week in June, frequenting the woods rather more commonly than the pastures and orchards, although it often breeds in these places. The nest is pensile, and is hung from the fork of a small limb of a tree, seldom more than fifteen or twenty feet from the ground. It is constructed of thin strips of cedar bark, pieces of wasps' nests, spiders' nests, pieces of caterpillars' silk, and other pliable materials. These are woven together neatly and compactly, and agglutinated together by the bird's saliva. It is suspended in the form of a basket from the forked twig to which it is attached, or rather firmly sewed. It is lined with narrow strips of grape-vine bark, pine leaves, and sometimes fine grass. On the outside are often visible bits of rotten wood, fragments of newspaper, and hornet's nest. One specimen in our collection, obtained in Maine, is constructed almost entirely of pieces of the bark of the white birch. It is a very neat fabric. The eggs are four in number, pure white in color, and thinly spotted, chiefly at the great end, with dots of brownish-black. Measurement of the eggs average .80 by .60 inch. Two broods are often reared in the season. The period of incubation is twelve days.

Of our Vireos there are some thirty species distributed throughout the New World. They are neatly plumaged birds, and of interesting habits. A very carefully prepared list of them, with descriptions, may be found in Baird's Review of North American Birds, published under the auspices of the Smithsonian Institution at Washington, D. C.

FAMILY FRINGILLID.E. FINCHES, SPARROWS.

In this very large and generally distributed group are many of the best singing-birds, and some of the most elegant plumaged of all the feathered tribes.

There is a very great variety of forms in this group, as the Buntings, Linnets, Sparrows, Grosbeaks, Crossbills, Weaver Birds, &c. The family is divided systematically by Professor Lilljeborg, as follows: —

FRINGILLID.E.	Number of Primaries	10. Culmen of bill extending at base between frontal feathers, without tubercle or ridge.	PLOCEIN.E.
		9. Palate { with tubercle or ridge. Lower mandible much larger than upper.	FRINGILLIN.E. EMBERIZIN.E.

The *Emberizinae*, or Buntings, are distributed throughout both the Old and New Worlds. At the approach of winter they associate in flocks, and those who spend the summer in high latitudes generally migrate to lower ones. In the breeding season they usually scatter in pairs over the open countries, preferring such to more wooded sections. "Their flight is rapid, and is generally performed in short distances from one bush to another; in their migrations their flight is usually undulated and quick. The food of these birds consists principally of seeds of various plants, grasses, and reeds; and in the warmer parts of the year, insects and their larvae form a portion of their subsistence. They generally build their nest in low bushes, or upon the ground among the tufts of grass; it is composed of dried grasses, internally lined with finer grass, hairs, and sometimes other softer materials; the eggs are usually from four to six in number." Among these birds the Snow Bunting (*Plectrophanes nivalis*) is well known in both worlds.

This is a common winter visitor in most parts of the United States, and is abundant in localities near the sea-coast. We have seen flocks of hundreds of individuals in the marshes in Plymouth County, Mass., and have almost always noticed that they were accompanied by Shore-larks and Red-polls. They feed on seeds of various wild plants and small shell-fish, and become, during their stay here, very fat, and are accounted as delicate eating by epicures, for whose tables they are killed in great numbers.

The following interesting account of the habits of this species is by Wilson. It is partly compiled from the observations of Mr. Pennant: —

"These birds," says Mr. Pennant, "inhabit not only Greenland, but even the dreadful climate of Spitzbergen, where vegetation is nearly extinct, and scarcely any but *cryptogamous* plants are found. It therefore excites wonder how birds, which are graminivorous in every other than those frost-bound regions, subsist, yet are there found in great flocks, both on the land and ice of Spitzbergen. They annually pass to this country by way of

Norway; for, in the spring, flocks innumerable appear, especially on the Norwegian Isles, continue only three weeks, and then at once disappear. As they do not breed in Hudson's Bay, it is certain that many retreat to this last of lands, and, totally uninhabited, to perform, in full security, the duties of love, incubation, and nutrition. That they breed in Spitzbergen is very probable; but we are assured that they do so in Greenland. They arrive there in April, and make their nests in the fissures of the rocks on the mountains, in May: the outside of their nest is grass, the middle of feathers, and the lining the down of the arctic fox. They lay five eggs, — white, spotted with brown: they sing finely near their nest.

" They are caught by the boys in autumn, when they collect near the shores in great flocks, in order to migrate, and are eaten dried.

" In Europe, they inhabit, during summer, the most naked Lapland alps, and descend in rigorous seasons into Sweden, and fill the roads and fields, — on which account the Dalecarlians call them *Illwarsfogel*, or bad-weather birds; the Uplanders, *Hardwarsfogel*, expressive of the same. The Laplanders style them *Alaipy*. Leems remarks, I know not with what foundation, that they fatten on the flowing of the tides in Finnmark, and grow lean on the ebb. The Laplanders take them in great numbers in hair springs, for the tables, their flesh being very delicate.

" They seem to make the countries within the whole arctic circle their summer residence, from whence they overflow the more southern countries in amazing multitudes at the setting in of winter in the frigid zone. In the winter of 1778-79 they came in such multitudes into Birsay, one of the Orkney Islands, as to cover the whole barony; yet, of all the numbers, hardly two agreed in colors.

" Lapland, and perhaps Iceland, furnishes the north of Britain with the swarms that frequent these parts during winter, as low as the Cheviot Hills, in latitude $52^{\circ} 32'$; their resting-places, the Feroe Isles, Shetland, and the Orkneys. The Highlands of Scotland, in particular, abound with them. Their flights are immense; and they mingle so closely together, in form of a ball, that the fowlers make great havoc among them. They arrive lean, soon become very fat, and are delicious food. They either arrive in the Highlands very early, or a few breed there; for I had one shot for me, at Invercauld, the 4th of August. But there is a certainty of their migration; for multitudes of them fall, wearied with their passage, on the vessels that are sailing through the Pentland Firth.

" In their summer dress, they are sometimes seen in the south of England, the climate not having severity sufficient to affect the colors; yet now and then a milk white one appears, which is usually mistaken for a white lark.

" Russia and Siberia receive them in their severe seasons, annually, in

amazing flocks, overflowing almost all Russia. They frequent the villages, and yield a most luxurious repast. They vary there infinitely in their winter colors, are pure white, speckled, and even quite brown. This seems to be the influence of difference of age more than of season. Germany has also its share of them. In Austria they are caught and fed with millet, and afford the epicure a treat equal to that of the *Ortolan*.

"These birds appear in the northern districts of the United States early in December, or with the first heavy snow, particularly if drifted by high winds. They are usually called the *White Snowbird*, to distinguish them from the small dark-bluish Snowbird already described. Their numbers increase with the increasing severity of weather and depth of snow. Flocks of them sometimes reach as far south as the borders of Maryland; and the whiteness of their plumage is observed to be greatest towards the depth of winter. They spread over the Genesee country, and the interior of the District of Maine, flying in close, compact bodies, driving about most in a high wind; sometimes alighting near the doors, but seldom sitting long, being a roving, restless bird. In these plentiful regions, where more valuable game is abundant, they hold out no temptation to the sportsman or hunter; and, except the few caught by boys in snares, no other attention is paid to them. They are, however, universally considered as the harbingers of severe cold weather. How far westward they extend I am unable to say. One of the most intelligent and expert hunters, who accompanied Captains Lewis and Clarke on their expedition to the Pacific Ocean, informs me that he has no recollection of seeing these birds in any part of their tour, not even among the bleak and snowy regions of the Stony Mountains, though the little blue one was in abundance.

"The Snow Bunting derives a considerable part of its food from the seeds of certain aquatic plants, which may be one reason for its preferring these remote northern countries, so generally intersected with streams, ponds, lakes, and shallow arms of the sea, that probably abound with such plants. In passing down the Seneca River, towards Lake Ontario, late in the month of October, I was surprised by the appearance of a large flock of these birds, feeding on the surface of the water, supported on the tops of a growth of weeds that rose from the bottom, growing so close together that our boat could with great difficulty make its way through them. They were running about with great activity; and those I shot and examined were filled, not only with the seeds of this plant, but with a minute kind of shell-fish that adheres to the leaves. In this kind of aquatic excursions they are doubtless greatly assisted by the length of their hind heel and claws. I also observed a few on Table Rock, above the Falls of Niagara, seemingly in search of the same kind of food.

According to the statements of those traders who have resided near Hudson's Bay, the Snow Buntings are the earliest of their migratory birds, appearing there about the 11th of April, staying about a month or five weeks, and proceeding farther north to breed. They return again in September, stay till November, when the severe frosts drive them southward."

The Sparrows and Finches are also very generally distributed; in their numbers are found some of the best singing-birds, such as the Song Sparrow of America, the White-throated Sparrow, the Vesper Bird, the Canary Bird, Purple Finch, &c. One of the best singers of these is the Purple Finch, sometimes called Red Linnet. It is distributed throughout the continent, from the Atlantic to the high central plains migrating north and south in the spring and autumn. In the north the birds separate into pairs soon after their arrival, about the middle of April, but do not commence building before the middle of May. They are occasionally resident through the mild winter. The nest is usually built in a pine or cedar tree, and is sometimes thirty or even forty feet from the ground, — oftener about fifteen or twenty. It is constructed of fine roots and grasses, and is lined with horsehair and hogs' bristles. One specimen in our collection has the cast-off skin of a snake woven in the rest of the fabric; and we have seen nests lined with mosses. Generally hairs of different animals form the lining, and roots and grass the main structure.

The eggs are of a beautiful bluish-green color, and marked with spots and streaks of black: their form is a sharply pointed oval, and their dimensions average about .94 by .64 inch. Wilson says of this species, —

"This is a winter bird of passage, coming to us in large flocks from the north, in September and October; great numbers remaining with us in Pennsylvania during the whole winter, feeding on the seeds of the poplar, button-wood, juniper, cedar, and on those of many rank weeds that flourish in rich bottoms and along the margin of creeks. When the season is very severe, they proceed to the south, as far at least as Georgia, returning north early in April. They now frequent the elm trees, feeding on the slender but sweet covering of the flowers; and, as soon as the cherries put out their blossoms, feed almost exclusively on the stamens of the flowers: afterwards, the apple blossoms are attacked in the same manner; and their depredations on these continue till they disappear, which is usually about the 10th or middle of May. I have been told that they sometimes breed in the northern parts of New York, but have never met with their nests. About the middle of September I found these birds numerous on Long Island, and around Newark in New Jersey. They fly at a considerable height in the air; and their note is a single *chink*, like that of the Rice Bird. They possess great boldness and spirit, and, when caught, bite violently,

and hang by the bill from your hand, striking with great fury; but they are soon reconciled to confinement, and in a day or two are quite at home. I have kept a pair of these birds upwards of nine months to observe their manners. One was caught in a trap, the other was winged with the gun: both are now as familiar as if brought up from the nest by the hand, and seem to prefer hemp seed and cherry blossoms to all other kinds of food. Both male and female, though not crested, are almost constantly in the habit of erecting the feathers of the crown. They appear to be of a tyrannical and domineering disposition; for they nearly killed an Indigo-bird, and two or three others, that were occasionally placed with them, driving them into a corner of the cage, standing on them, and tearing out their feathers, striking them on the head, munching their wings, &c., till I was obliged to interfere; and, even if called to, the aggressor would only turn up a malicious eye to me for a moment, and renew his outrage as before. They are a hardy, vigorous bird. In the month of October, about the time of their first arrival, I shot a male, rich in plumage and plump in flesh, but which wanted one leg, that had been taken off a little above the knee: the wound had healed so completely, and was covered with so thick a skin, that it seemed as though it had been so for years. Whether this mutilation was occasioned by a shot, or in party quarrels of its own, I could not determine; but our invalid seemed to have used his stump, either in hopping or resting, for it had all the appearance of having been brought in frequent contact with bodies harder than itself."

The Crossbills (*Loxia*) are placed with these birds: the curiously formed bills of the *Loxias* makes them interesting to the naturalist. The mandibles are elongated and narrowed, the points crossing or overlapping to a greater or less degree: the various species are distributed in both the New and Old Worlds. They feed principally on the seeds of the pine trees, and the form of the bill is well adapted to the detaching the seeds from the cones. They breed in high latitudes, and in the severity of winters they migrate to more southern localities. They are very tame and unsuspecting in their native haunts. We have been visited by them in our camp in New Brunswick, the birds flying down to the floor of our tent to pick up the crumbs that had fallen.

The *Ploceinae*, or Weaver Birds, are among the most interesting of their family. They number some ninety species, and are distributed throughout Africa and some portions of India. They are all distinguished for their wonderful weaving capacity in the construction of their nests, and some of their habitations are exquisite models of neatness and durability. Some congregate in communities, especially those included in the genus *Ploceus*, and are called the Republican or Sociable Weavers: these birds unite and

construct a roof of interwoven grasses, beneath which they arrange their individual nests. One of these communities is thus described:—

"The industry of these birds seems almost equal to that of the bee. Throughout the day they appear busily employed in carrying a fine species of grass, which is the principal material they employ for the purpose of erecting this extraordinary work, as well as for additions and repairs. When the tree that is the support of this aerial city is obliged to give way to the increase of weight, it is obvious that they are no longer protected, and are under the necessity of building in other trees. One of these deserted nests I had the curiosity to break down, to inform myself of the internal structure of it, and found it equally ingenious with that of the external. There are many entrances, each of which forms a regular street, with nests on both sides, at about two inches distance from each other. The grass with which they build is called the Boshman's grass, and I believe the seed of it to be their principal food, though on examining their nests I found the wings and legs of different insects. From every appearance, the nest which I dissected had been inhabited for many years, and some parts were much more complete than others. This I conceive to amount nearly to a proof that the birds added to it at different times, as they found it necessary from the increase of their family, or rather of the nation and community."

Another writer says, —

"When a nestling-place has been selected, and the operation of building the nests is to be commenced *ab initio*, the community immediately proceed conjointly to construct the general covering which interests them all; that being accomplished, each pair begins to form their own nest, which, like the roof, they construct of coarse grass; these are placed side by side against the under surface of the general covering, and, by the time they are all completed, the lower surface of the mass exhibits the appearance of an even horizontal surface, freely perforated by small circular openings.

"They never use the same nests a second time, though they continue for many years attached to the same roof. With the return of the breeding season, fresh nests are formed upon the lower surface of those of the preceding year, which then form an addition to the general covering. In this manner they proceed year after year, adding to the mass, till at last the weight often becomes such as to cause the destruction of its support; upon which a new building-place is selected. They appear to prefer constructing these nests upon large and lofty trees; the commencement of the roof is firmly interwoven with the branches of the tree to which it is intended to be suspended, and often a great part of a principal branch is actually included within its substance."

FAMILY CORVIDÆ. CROWS, JAYS, MAGPIES.

In the *Corvidæ* of Lilljeborg are comprehended several groups, with characters so dissimilar, that were not his formula exceedingly comprehensive, many of the birds could not be admitted in what are usually called the *Corvidæ*: that our beautiful orioles should be placed with the crows, seems, at the first glance, inconsistent with reason and good classification; yet, with the characters designated, this classification is tenable. Lilljeborg's formula is as follows: —

<i>CORVIDÆ.</i>	{ long, slender, and incurved.	EPIMACHINÆ.
Bill	{ stout; rather short	PARADISELINEÆ.
	{ or moderate. Feet	{ straight. Madi-	CORVINEÆ.
		{ very slightly or not distinctly notched.	
	{ moderate. Fis-	{ Tarsus	GARRULINEÆ.
	sure of mouth	{ longer than middle toe with	
		{ claw	ORIOTINEÆ.
		{ shorter than middle toe with	SURNINEÆ.
		{ claw	ICELINEÆ.
		descending. Number of primaries	
		{ 10	
		{ 9	

In the sub-family *Icterinae* are included our American Orioles, Starlings, and Crow Blackbirds—all of which are confined to the New World. In these birds there are a very great variety of forms, habits, and plumage: they are found abundantly in both North and South America, and the adjacent islands; many of them are of most brilliant plumage, and some are possessed of great powers of song. Of the American Orioles there are some sixty species. They generally frequent trees, and subsist partially upon different fruits and berries, and principally upon insects and larvae. The nest is generally pensile, and is most ingeniously woven by the united labor of both the male and female bird.

The Orchard Oriole and Baltimore Oriole, or Golden Hangnest, are well-known members of this group. The first-named species is most abundant in the Southern and Western States, while the other is very generally distributed.

Nuttall, in describing the habits of the Orchard Oriole, says, —

"The Orchard Oriole is an exceedingly active, sprightly, and restless bird: in the same instant, almost, he is on the ground after some fallen insect; fluttering amidst the foliage or the trees, prying and springing after his lurking prey; or flying, and tuning his lively notes in a manner so hurried, rapid, and seemingly confused, that the ear is scarce able to thread out the shrill and lively syllables of his agitated ditty. Between these hurried attempts, he also gives others, which are distinct and agreeable; but still his tones are neither so full nor so mellow as those of the brilliant and gay Baltimore."

"The female sits about fourteen days, and the young continue in the nest ten (?) days before they become qualified to flit along with their parents; but they are generally seen abroad about the middle of June. Previously to their departure, the young, leaving the care of their parents, become gregarious, and assemble, sometimes in flocks of separate sexes, from thirty to forty upwards; in the South, frequenting the savannahs, feeding much on crickets, grass-

hoppers, and spiders. According to Audubon, they sing with great liveliness in cages, being fed on rice and dry fruits when fresh cannot be procured. Their ordinary diet, it appears, is caterpillars and insects, of which they destroy great quantities. In the course of the season they likewise feed on various kinds of juicy fruits and berries, but their depredations on the fruits of the orchard are very unimportant."

The Baltimore Oriole is very familiar in its habits, building its swinging nest in the branches of the elm tree which overhangs the cottage or farmhouse, and peeping into the windows and doors in its search for threads and pieces of cotton cloth for fabrication into its nest, uttering at the same time a rich, clear whistle, that always sounds cheerful and lively.

Nuttall describes the nest of the species in the following:—

"There is nothing more remarkable in the whole instinct of our Golden Robin than the ingenuity displayed in the fabrication of its nest, which is, in fact, a pendulous, cylindric pouch, of five to seven inches in depth, usually suspended from near the extremities of the high drooping branches of trees (such as the elm, the pear or apple tree, wild cherry, weeping willow, tulip tree, or buttonwood). It is begun by firmly fastening natural strings of the flax of the silkweed, or swamp hollyhock, or stout artificial threads, around two or more forked twigs, corresponding to the intended width and depth of the nest. With the same materials, willow-down, or any accidental ravelings, strings, thread, sewing-silk, tow, or wool, that may be lying near the neighboring houses, or around grafts of trees, they interweave and fabricate a sort of coarse cloth into the form intended, towards the bottom of which they place the real nest, made chiefly of lint, wiry grass, horse and cow hair: sometimes, in defect of hair, lining the interior with a mixture of slender strips of smooth vine-bark, and rarely with a few feathers; the whole being of a considerable thickness, and more or less attached to the external pouch. Over the top, the leaves, as they grow out, form a verdant and agreeable canopy, defending the young from the sun and rain. There is sometimes a considerable difference in the manufacture of these nests, as well as in the materials which enter into their composition. Both sexes seem to be equally adepts at this sort of labor; and I have seen the female alone perform the whole without any assistance, and the male also complete this laborious task nearly without the aid of his consort, who, however, in general, is the principal worker."

The eggs are four or five in number. They are of a flesh color, with sometimes a bluish tint: they are marked with obscure lines of lavender, over which are irregular scratches and lines, as if done with a pen, of vandyke brown and black. Their dimensions average about .90 by .70 inch. The food of this bird, and also of the preceding species, consists of cater-

pillars and other injurious insects : great numbers of the hairy caterpillars are destroyed ; and sometimes a large nest of the apple-tree caterpillars is depopulated in a few days. The Orioles are certainly, therefore, worthy the highest consideration and protection from the farmer.

Of the Starlings there are over thirty species : they are scattered over North and South America, and many of the species are migratory. They frequent more open and marshy countries than those inhabited generally by the American Orioles, and subsist upon seeds, berries, and insects. After the young birds have left the nest, they unite with the old birds, and they, with the birds of other families of generally the same species, congregate in immense flocks, which, descending upon the grain fields, make, in many places, great havoc. Of these birds, the Rice Bird or Bobolink is a familiar example.

This well-known merry songster of the North, Reed Bird or Ortolan of the Middle States, and Rice Bird of the South, is abundantly distributed throughout most sections of the eastern half of the continent, ranging from the latitude of Quebec, in Lower Canada (which is its most northern breeding point), through New England and its latitude in summer, to Mexico, Central America, West Indies, and the northern portions of the Southern Continent, where it passes the winter.

Early in spring it makes its appearance in the Southern United States, usually in small, detached parties of from eight to a dozen individuals, and proceeds leisurely to its summer home in the North, generally at about the following dates : being abundant in Georgia about April 20 ; in District of Columbia, "distributed about orchards and meadows in flocks, from May 1st to 15th ;" arrives on Long Island, N. Y., "about the 20th of May," and is abundant in the latitude of New England by the latter part of that month.

During the northern passage of these birds, they depend for a subsistence very greatly upon the newly-sown fields of grain, or those which were earlier sown, and have advanced to the milky stage ; and the damage they inflict is something quite considerable. They also frequent newly-ploughed fields, and swamps, and meadows, and destroy numbers of larvae and worms.

The males usually arrive in the North several days before the females, during which interim they frequent meadows and fields in cultivated districts, preferring them to thinly-settled localities, and soon become very tame and familiar, considering the severity with which they were pursued by the inhabitants of all the countries they traversed in their migration, by whom they are regarded only as a pest and a nuisance. The Bobolink knows when he has arrived among his friends ; and the same bird which would have risen beyond gunshot from you in the South, will perch on your garden fence in New England as familiarly as if he were "to the manor born," and regale you with a flood of his choicest melodies.

Almost everybody in the North knows the song of this bird, and has laughed, in spite of him or herself, at the grotesque singer, as, perched on a twig in the cherry tree by the house, or in the elm by the roadside, or alder by the brook, he nodded his head, quivered his wings, opened his mouth, and rattled out the most curious, incomprehensible, jingling, round-about, careless, joyous, laughable medley that any bird throat ever uttered.

As soon as the females arrive, they become the especial objects of attention with their male neighbors, and the little contentions, both in music and something more severe, we must confess, for the possession of a favored one, between the contesting suitors, are almost innumerable.

The female is, at the outset, apparently indifferent to the attractions of any particular suitor, and, in fact, seems a little bored at all their manifestations; but all her indifference is assumed and unreal, and the cavalier who can outsing and vanquish his rival, becomes the possessor of her maiden, or, it may be, thrice-widowed affections, "to have and to hold," until the southern migration in the autumn.

When the birds are mated, usually early in June, they commence the structure in which their family is to be reared. Selecting a thick tussock of grass in a field or meadow, through which, or near which, a brook prattles of cool and delicious draughts, and sweet and refreshing baths, all through the hot and dusty summer,—dusty, because of the breezes blowing over the dry, sandy roads, and fields of corn, lifting and carrying along with them the light, dry material on the surface near at hand,—both birds, beneath the bending and concealing leaves, bring and entwine fine grasses and rootlets into a loose and not deeply-hollowed nest, which they smooth and line with softer pieces of the same material.

The position is so well chosen that, nine times out of ten, if you walk the meadow over again and again, knowing it to be there, you will not discover the nest; the male bird flies over your head, chiding and complaining at your presence, and his mate, skurrying off through the thick grass, rises away from the nest, that you may not discover its locality.

The eggs, four or five in number, vary in color from a light ashy blue, with spots of blackish brown, to a pale-brownish clay, with spots and blotches of umber of different shades; their form is usually a perfect ovate, and they vary in dimensions from .90 of an inch in length by .65 of an inch in breadth, to .86 of an inch in length by .62 of an inch in breadth.

As soon as the young birds are hatched, the father, hitherto full of song and merriment, becomes more quiet, spending a great part of his time in family cares. The young birds are fed on grasshoppers, crickets, and various other insects; and this food is the chief sustenance of the parents as well, at this period, for the seeds of the wild grasses are not yet ripened, and

incursions in the grain fields are tabooed while the young are in the nest. Is there not a little of judicious reasoning in this? Look at it: if the bird cultivates the good will of the farmer, by destroying his insect enemies, and letting his crops grow in peace, he is permitted to rear his family in security, and is even rather liked, his song being a most pleasant companionship to the farmer who delves and plods in the fields around him. What would be the fate of Bob if he were notoriously a plague in the North? Glance at the position of the crow and you are answered. See the black outlaw! how careful he is not to poke his nose within gunshot of a man, or a semblance of one in the fields, but keeps carefully in the woods and meadows! But if the Bobolink were driven from man's society to this extent, he would suffer sadly; for, setting aside the abundance of his favorite food where settlements are thickest, he would fall a victim, and his family, too, to any prowling skunk, or mink, or fox that might be passing by his home, which is always on the ground.

So the Bobolink spares the crops until his family is able to care for themselves, and then, ah! then is another story.

When the young birds leave the nest, the parents provide for them for a few days, and then turn them away to shift for themselves: this is in about the middle of July. The old birds then pass a comparatively idle season—roaming through the country, recuperating from the cares of parentage, and exchanging their nuptial dress for one more in accordance with their matured, respectable, old folks' condition; the male assumes the sober, and lately more sober, attire of his mate, and dropping his song, contents himself with repeating her simple "*chink*."

So much do the old and young birds resemble each other that, in the flocks of from fifty to one hundred individuals, in which they gather in early fall, it is impossible by the plumage to distinguish either.

Many writers and others have wondered at this change, and by the multitude it is considered remarkable; but it is not peculiar to this bird alone, for there are many species whose dresses are entirely different in the winter and summer season; witness the Ptarmigans, which change from brown to pure white in winter; the Snow Buntings, which change from mottled brownish and white in winter to pure black and white in summer; some of the Warblers, Ducks, &c. Early in September the Bobolinks begin to move southward, and although they obtain a great portion of their sustenance from fields and meadows, gleaning seeds of grasses and weeds, and capturing orthopterous and other insects, they make sad havoc in the fields of late grain and rice; and the firing of guns during their passage through the Middle and Southern States, not only by farmers' and planters' boys, but by sportsmen and pot hunters, who shoot them for the table and market, is often almost incessant.

Belonging to this group is the American Cow Bird, or Cow Troopial, as it is sometimes called. This species, like the European Cuckoo, prepares no nest, but selects those of other birds, distributing one or two eggs to each, and leaving them to be hatched, and the nestling to be reared, by foster-parents.

The birds whose nests it chiefly selects are the red-eyed and white-eyed vireos, and the Maryland yellow throat; but the bluebird, the indigo bird, the chipping sparrow, the yellow warbler, the golden-crowned thrush, and many others, are also thus imposed upon. Says Nuttall,—

"When the female is disposed to lay, she appears restless and dejected, and separates from the unregarding flock. Stealing through woods and thickets, she pries into the bushes and brambles for the nest that suits her, into which she darts in the absence of its owner, and in a few minutes is seen to rise on the wing, cheerful and relieved from the anxiety that oppressed her, and proceeds back to the flock she had so recently forsaken. If the egg be deposited in the nest alone, it is uniformly forsaken; but if the nursing parent have any of her own, she immediately begins to sit."

Mr. Nuttall knew of the red-eyed Vireo beginning her incubation with only an egg of each kind, whilst in other nests he noticed as many as three belonging to the Vireo and one to the Cow Bird.

We have found nests of the Yellow Warbler with two Cow Bunting's eggs in them, and we have in our possession several nests of this species in which the Troopial, having laid an egg, the Warblers, in order to prevent the hatching of the parasite, built upon the nest another structure (completely covering the Cow Bird's egg), in which the rightful nestlings were hatched and reared, the Troopial's egg remaining covered up until it was addled. The Cow Bird's egg, being larger than those with which it is deposited, receives a larger share of the heat of the incubating bird, and is hatched generally a day, or perhaps more, before the others. The young stranger, being larger than its companions, often stifles them by its superior weight, when they are conveyed to a distance by the parent and dropped: they are never, or at least very rarely, found below the nest, as they would be if they were ejected by the young Cow Bird, which shows that it has no hostile feelings against its foster-companions. "Indeed," says Mr. Nuttall, "as far as I have had opportunity of observing, the foundling shows no hostility to the natural brood of his nurses, but he nearly absorbs their whole attention, and early displays his characteristic cunning and self-possession. When fully fledged, they quickly desert their foster-parent, and skulk about in the woods, until at length they instinctively join company with those of the same feather; and now, becoming more bold, are seen in parties of five or six, in the fields and lanes, gleaning their accustomed subsistence."

ORNITHOLOGY.

Plate XVI



YELLOW-BELLIED SUNBIRD
(*Nectarinia jugularis*)



GREEN KINGFISHER
(*Todiramphus chloris*)



TRICHOGLOSSUS SWAINSONII
(Blue Bellied Lorikeet)



COMMON KINGLET
(*Regulus regulus*)



BOHEMIAN WAXWING.
(*Bombycilla garrula*)



COMMON KINGFISHER OF EUROPE.
(*Alcedo atthis*)

BOSTON, SAMUEL WALKER & CO.

The Crow Blackbirds are also very generally distributed throughout the American continent and the adjacent islands. Many of these birds are possessed of handsome plumage, but often they are neither attractive in dress, voice, nor habits.

The *Sturnine*, or Stares, are confined to the Old World. The Starling, *Sturnus vulgaris*, is a well-known member of this group.

This bird is very generally spread over Europe, and is also found in China, the Himalaya, the Cape of Good Hope, and Northern Africa. It is common in the British Islands, and is often kept as a cage bird, becoming very familiar, and learning to utter tunes, words, and even sentences. Its natural song is a low, sweet warble.

During the breeding season the Starlings live in pairs, constructing their nests in the crevices of towers, steeples, old ruins, the clefts of rocks, and even the deserted nests of the crow and other large birds.

When the breeding season is passed, these birds congregate in immense flocks, which, often intermingled with rooks and other birds, scatter over the fields in search of food.

On the approach of dusk, the scattered multitudes collect into one vast flock, wheeling and sweeping through the air, and performing the most beautiful aerial evolutions, as if obeying definite signals of command, while the assemblage bears on to some place of repose. This is generally a thick copice, or extensive tract of reeds, and over it the mass wheels in varying figures, now sinking, now rising, now suddenly turning, till at length the horde settles for the night, long keeping up a noisy, clattering concert.

The Starling is migratory in fall and spring, moving southwards at the approach of winter, and returning with the mild weather of spring.

The *Orioline*, or Old World Orioles, number some thirty species. "They are found solitary or in pairs, and occasionally in small flocks, frequenting the skirts of forests, gardens, and orchards, feeding on the various kinds of fruits and insects. Their flight is undulating when flying from one lofty tree to another to search the foliage for the caterpillars which may be feeding on them. They emit a loud, mellow, plaintive cry. The nest is rather flat and saucer-shaped, and generally placed in a fork of the boughs of a tree, to both branches of which it is firmly attached. It is usually made of sheep's and other wools, and long, slender stems of grass. The nests of some species are elongated, purse-shaped, and pendulous, hanging from high branches of trees. The eggs are four or five in number.

The *Garruline*, Jays, &c., are numerous and widely distributed: some species are restricted to limited areas, while others extend over a wide range of territory. Of the Jays proper, our American Blue Jay is a good example.

This beautiful and well-known bird is abundantly distributed throughout Eastern North America. It is less common in the northern than in the southern districts, but is often seen there, not in company with the Canada Jay however.

Its food is more varied than that of almost any other bird that we have. In winter, the berries of the cedar, barberry, or blackthorn, with the few eggs or cocoons of insects that it is able to find, constitute its chief sustenance. In early spring, the opening buds of shrubs, caterpillars, and other insects, afford it a meagre diet. Later in the spring, and through the greater part of summer, the eggs and young of the smaller birds constitute its chief food, varied by a few insects and early berries. Later in the summer, and in early autumn, berries, small fruits, grains, and a few insects, afford it a bountiful provender; and later in the autumn, when the frosts have burst open the burrs of chestnuts and beechnuts, and exposed the brown, ripe fruit to view, these form a palatable and acceptable food; and a large share of these delicious nuts fall to the portion of these busy and garrulous birds.

The notes of the Blue Jay consist of a shrill cry, like *jay-jay-jay*, repeated often, and in a high key; a shrill whistle, like the syllables *whēō-whēō-whēō*; a hoarse rattle, something like a Kingfisher's well-known alarm, and an exceedingly sweet, bell-like note, that possesses a mournful tone, like that of a far-off hamlet bell tolling a funeral dirge.

We have often heard this tone in the autumn, when the leaves were falling from the trees, and all nature wore its funeral livery; and it seemed to me, when the clear notes of the bird were echoed from hillside to hillside in the forest, that it was wandering like a forest elf through the trees, mourning the decay of all the charms that had made them so beautiful through the spring and summer.

About the first or second week in May, the Blue Jay commences building. The nest is usually placed in a fork of a low pine or cedar, in a retired locality: it is loosely constructed of twigs and coarse roots, and lined with the same materials, but of a finer quality, and sometimes a few pieces of moss or a few leaves. The eggs are four or five in number. Their color is generally light green, with spots of light brown; sometimes a dirty brownish gray, spotted with different shades of brown and black. The dimensions vary from 1.20 by .85 to 1 by .80 inch. But one brood is reared in the season.

The Canada Jay is another of our American species. It is confined to the more northern districts, where it is resident through the year. We have not been so fortunate as to find the nest, and will borrow Audubon's description of that and the eggs:—

"The Canada Jay breeds in Maine, in New Brunswick, Nova Scotia, New-

foundland, and Labrador. It begins as early as February or March to form its nest, which is placed in the thickest part of a fir tree, near the trunk, and at a height of from five to ten feet. The exterior is composed of dry twigs, with moss and grass; and the interior, which is flat, is formed of fibrous roots. The eggs, which are from four to six, are of a light-gray color, faintly marked with brown."

This bird is not generally so well known as the preceding. We have had numerous opportunities for observing its habits, and we can positively affirm that it is equally rapacious and destructive with the Blue Jay, which it resembles in motions and cry.

We once knew of a single pair of these birds destroying the young in four nests of the Common Snowbird (*J. hyemalis*) in a single day. We found these in an old, abandoned lumber-road on the morning of June 20; in the afternoon, when we returned through the same path, every nest was depopulated, and a pair of these Jays were lurking in the trees, shouting defiance at us, while surrounded by the afflicted Snowbirds, that were uttering their cries of complaint and sorrow. The familiarity with which this species fraternizes with man in the woods is interesting and amusing. We were once "snowed in," as the expression is, in a large tract of forest, and, with our companions, were obliged to wait until the storm had ceased before we could resume our march. We remained in camp two days. A pair of these birds, probably with young in the neighborhood, visited our camp, and even penetrated into our tent for crumbs and pieces of bread. They always flew off' with their mouths full, and soon returned for more: their visits soon got to be anything but a joke, particularly when they flew off with the last piece of our soap. We couldn't kill them, however; for anything with life was company, and we felt that we had none of that to spare.

The *Corvinæ*, or Crows proper, constitute a very large and widely distributed group; in it are placed the Ravens, the Crows, the Tree Crows, the Magpies, the Fruit Crows, and many others. Our limits will prevent a consideration of more than one or two species. The Raven of Europe and that of America are almost identical; in fact, some writers have classed them as of the same species: the former bird is generally distributed throughout Europe, and the other is found in many portions of this continent.

They are both well known: their food consists of the eggs and young of other birds, grains, insects, reptiles,—in short, almost everything edible. They have been known to attack lambs, and pick out their eyes, and to pounce upon and kill young chickens and other domestic poultry. An instance is on record of a fight between a raven and gamecock, in which the raven was victor, killing his antagonist with a powerful stroke of the bill.

This species' nests are sometimes in tall trees, most often in caves or in clefts of tall cliffs. We know of a cave in Ohio, in which a pair of ravens have nested for many years, laying their eggs, and rearing their young generally in perfect security. As these birds and the crows have been so fully and carefully treated of in nearly all books of natural history, we will not give them an extended notice here, but will proceed to a consideration of their nearly-allied relatives, the Magpies.

The Magpie of Europe (*Pica caudata*) is a well-known species. In England, it is noted for its destructiveness among the young broods of feathered game, as pheasants, partridges, grouse, &c. "Nothing, in fact, comes amiss to its voracious appetite—eggs, carrion, frogs, mice, insects, fruits, and grain are all acceptable; and it is hated alike by the farmer and the gamekeeper."

With its many faults, it is far from being an uninteresting bird. It is active, daring, animated, and intelligent: it is the first to give shrill warning of the approach of the skulking fox, the cat, the hawk, and the owl, and no bird harasses the intruder with greater pertinacity. Resolutely does it defend its nest, but it is too ready to attack those of other species, which it mercilessly despoils; sometimes, however, meeting with a signal defeat.

"The nest of the Magpie is a substantial edifice, generally placed in the top of a tall tree, or amidst the dense branches of an elevated old hawthorn. It consists of an external basket-work of sticks, mostly thorns, well united together, those forming the foundation being mixed with clay and turf. The inside of this basket-work, which is in the form of a cup, is lined with a thick layer of well-wrought clay, over which is arranged an inner layer of pliable roots and fibres neatly interwoven. The whole is then covered with an elevated dome, composed of intertwined sticks of the thorn or the blackthorn; this is evidently intended as a framework of defence; an aperture is left in the side for the ingress and egress of the bird. The whole mass is of large size, and on the open-topped elm or ash, near the farm or cottage, the dark ball is a conspicuous object. In captivity, the Magpie is very amusing from its archness and cunning: it is fond of stealing slyly behind people, and suddenly pecking their heels, and then rapidly hopping away. Glittering things attract its curiosity and excite its cupidity, and many a lost article is often recovered from the hiding-place to which it is in the habit of carrying its plunder."

The *Paradiseini*, or Birds of Paradise, comprehend some of the most beautifully plumaged of all the birds.

"The Birds of Paradise are natives of New Guinea and the adjoining islands: of these, the Emerald Bird is best known. This species," says M. Lesson, "live in troops in the vast forests of the country of the Papuans.

They are birds of passage, changing their quarters according to the monsoons. The females congregate in troops, assemble upon the tops of the highest trees of the forests, and all cry together to call the males. These last are always alone in the midst of some fifteen females, which compose their seraglio, after the manner of the gallinaceous birds."

"Soon after our arrival on this land of promise (New Guinea) for the naturalist, I was on a shooting excursion. Scarcely had I walked some hundred paces in those ancient forests, when a Bird of Paradise struck my view: it flew gracefully, and in undulations; the feathers of its sides formed an elegant and aerial plume, which, without exaggeration, bore no remote resemblance to a brilliant meteor. Surprised, astounded, enjoying an inexpressible gratification, I devoured this splendid bird with my eyes; but my emotion was so great that I forgot to shoot at it, and did not recollect that I had a gun in my hand till it was far away.

"The Emerald Bird, when alive, is of the size of the common Jay; its feet and beak are bluish, the irides are of a brilliant yellow, its motions are lively and agile, and, in general, it never perches except upon the summit of the most lofty trees. When it descends, it is for the purpose of eating the fruits of the lesser trees, or when the sun, in full power, compels it to seek the shade. It has a fancy for certain trees, and makes the neighborhood reecho with its piercing voice. This cry indicated to us the movements of the birds. We were on the watch for them, and it was thus that we came to kill them; for when a male Bird of Paradise has perched, and hears a rustling in the stillness of the forest, he is silent, and does not move. His call is *voike, voike, voike, voiko*, strongly articulated. The cry of the female is the same, but she raises it much more feebly.

"It is at the rising and setting of the sun that the Bird of Paradise goes to seek its food. In the middle of the day it remains hidden under the ample foliage of the teak tree. It seems to dread the scorching rays of the sun, and to be unwilling to expose itself to the attacks of a rival."

There are a number of species of Birds of Paradise, among which the Incomparable, King Bird, and Superb Bird are the most magnificent.

One of these birds, *P. apoda*, which had been kept in captivity nine years when the account was written, is described by Bennett, in his "Wanderings," as follows:—

"This elegant creature has a light, playful, and graceful manner, with an arch look; dances about when a visitor approaches the cage, and seems delighted at being made an object of admiration: its notes are very peculiar, resembling the cawing of the raven, but its tones are by far more varied. During four months of the year, from May to August, it moults. It washes itself regularly twice a day, and, after having performed its ablutions, throws

its delicate feathers up nearly over the head, the quills of which feathers have a peculiar structure, so as to enable the bird to effect this object. Its food during confinement is boiled rice, mixed up with soft egg, together with plantains, and living insects of the grasshopper tribe; these insects, when thrown to him, the bird contrives to catch in his beak with great celerity: it will eat insects in a living state, but will not touch them when dead.

"One of the best opportunities of seeing this splendid bird in all its beauty of action, as well as display of plumage, is early in the morning, when he makes his toilet; the beautiful subular plumage is then thrown out, and cleaned from any spot that may sully its purity by being passed gently through the bill; the short chocolate-colored wings are extended to the utmost, and as he keeps them in a steady, flapping motion, as if in imitation of their use in flight, at the same time raising up the delicate, long feathers over the back, which are spread in a chaste and elegant manner, floating like films in the ambient air.

"I never yet beheld a soil on its feathers. After expanding the wings, it would bring them together so as to conceal the head; then bending it gracefully, it would inspect the state of its plumage underneath. This action it repeats in quick succession, uttering at the time its croaking notes: it then pecks and cleans its plumage in every part within reach, and throwing out the elegant and delicate tufts of feathers underneath the wings, seemingly with much care, and with not a little pride, they are cleaned in succession if required, by throwing them abroad, elevating them, and passing them in succession through the bill."

"A drawing of the bird, of the natural size, was made by a Chinese artist. The bird advanced steadily towards the picture, uttering at the same time its cawing congratulatory notes; it did not appear excited by rage, but pecked gently at the representation, jumping about the perch, knocking its mandibles together with a clattering noise, and cleaning them against the perch, as if welcoming the arrival of a companion. After the trial of the picture, a looking-glass was brought to see what effect it would produce upon the bird, and the result was nearly the same. He regarded the reflection of himself most steadfastly in the mirror, never quitting it during the time it remained before him. When the glass was removed to the lower from the upper perch, he instantly followed, but would not descend upon the floor of the cage when it was placed so low.

"The bird is not at all ravenous in his habits of feeding, but he eats rice leisurely, almost grain by grain. Should any of the insects thrown into his cage fall upon the floor, he will not descend to them, appearing to be fearful that in so doing he should soil his delicate plumage. He therefore seldom or never descends, except to perform his ablutions in the pan of water placed at the bottom of the cage expressly for his use."

The *Epimachinæ*, or Plumed Birds, are found in New Zealand, New Guinea, and Australia. Of these, the *Neomorpha Gouldii* is found on the Torirua range of mountains in New Zealand. "It is usually observed perched on the lower branches of the trees, quickly moving from branch to branch, and at the same time spreading out its tail, and throwing up the wings in a grotesque manner. The food of this bird consists of seeds, and various kinds of berries. The species of *Epimachus*, which inhabits Australia, has been noticed as ascending the upright boles of trees, precisely after the manner of creeping birds; and, like them, its powers of flight are very limited, being seldom exerted except to transport itself from tree to tree, or from one portion of the forest to another."

These birds are generally of most gorgeous plumage; but little is on record concerning their habits, and that little is indefinite. They present an interesting field for the study of future naturalists.

FAMILY NECTARINIDÆ. THE HONEY BIRDS.

This very extensive group, as given by Lilljeborg, comprehends genera that other systems exclude. Our space will not permit an extended review of the literature on this subject, and we must content ourselves with a brief, general view of the family.

The *Dacnidinæ*, of which *Dacnis*, of Gray, is a good type, are found in South American forests, particularly where flowering plants and shrubs are abundant. The *Nectarinidæ*, of which *Nectarinia*, of Gray, is the type, are distributed throughout the continent of Africa, as well as India and its archipelago. Gray says of the genus *Nectarinia*, —

"It is on the upper smaller branches of trees and bushes that they are seen in pairs or in small parties, hopping about with a quick motion, and at the same time continually moving their wings in a tremulous manner, while searching the flowers to obtain the nectar and the minute insects which are found in them. They are occasionally observed hovering on the wing before flowers while engaged in the same occupation. Spiders also form a portion of their subsistence; these the bird drags from their hiding-places and from their webs while fluttering in the air, and it will also occasionally snap at an insect while it is flying. The notes seem to vary with the species; but they are usually weak, though pleasing. The nest is usually suspended, and of a hemispherical form, having generally an opening on one side nearer the bottom than the top, with a small roof over it. It is composed of dry fibres, mixed with moss and down within. The exterior portion of the nest is sometimes kept together by means of a thick spider's web, which the bird uses in the first instance as a framework to attach the various materials on. The eggs are generally two in number."

These birds are generally of diminutive size, and of most beautiful plumage. Their habits are somewhat similar to those of the humming birds. In fact, these birds replace in the Old World the humming birds of the New.

The *Meliphagine*, or Honey-suckers and Honey Creepers, are also confined to the Old World, being found in Australia, New Zealand, and New Guinea. *Meliphaga*, the typical genus, is thus described by Gray:—

"The vast continent of Australia contains most of the species of this genus, though a few have been discovered on the islands that lie off its northern side. Wherever the Eucalypti and the Bauksias are seen in flower, there are found these birds seeking their principal food, which consists of the pollen and juices that abound in the flowers of those trees. They also feed on the small insects that lie concealed in them, and the fruits and berries of various kinds of plants. Their movements among the branches are very active, and at the same time accompanied with a series of graceful and easy motions; and their rapid and jerking flight is only extended from tree to tree. The note of these birds consists of a loud, shrill, whistling noise, which, however, is rather melodious in some species. The nest is usually built in some low tree or bush. It is composed of small twigs, coarse grass, moss, and strips of bark, lined interiorly with soft materials, principally derived from plants. The eggs are generally two or three in number."

The Sun Birds, Honey Birds, Honey Creepers, of various authors, are comprehended in this group. Their numbers are great, and their habits interesting, although but little is known concerning very many of the species.

Like the marsupial animals of their own homes, a group, to all appearance equally anomalous, which contains within its own circle representatives of nearly if not all the other groups of the *Mammalia*, this division of birds comprises every form which is observable among the families of the *Insessores*. From the powerfully-constructed and strong-billed *Corvidæ* down to the slender *Merops*, every Insessorial group seems to have its analogous type in this family. Their approach to the Scansorial tribe is strongly conspicuous. The hind toe of the greater portion of the group is long, powerful, and apparently formed for climbing. In this point of view, they seem, in Australia, to supply the place of the genuine *Pici*. Mr. Lewin, in his "Birds of New Holland," describes the Warty-faced Honey-sucker (*Meliphaga Phrygia*) as constantly flying from tree to tree, extracting the honey from the blossoms with their long tongues, and speaks of another species—the Blue-faced Honey-sucker—as picking transverse holes in the bark, between which and the wood it inserts its long tongue in search of small insects, which it draws out with great dexterity.

We see, then, that while the varieties of form among these birds are numerous, their habits are no less varied, and their study must offer a great field for the future ornithologist.

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